NEIGHBORS
IN
THE
AMERICAS

CURRICULUM

J. Russell Smith

Frank E. Sorenson

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NEIGHBORS IN THE AMERICAS

J. Russell Smith *and* Frank E. Sorenson

THE JOHN C. WINSTON COMPANY • *PHILADELPHIA*

CHICAGO TORONTO

LOS ANGELES ATLANTA DALLAS

OUR NEIGHBORS GEOGRAPHIES:

OUR NEIGHBORS AT HOME

NEIGHBORS AROUND THE WORLD

NEIGHBORS IN THE AMERICAS

Illustrated by Alberto Cugat
Cartography by Dr. Hubert A. Bauer

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To Our Readers

NEIGHBORS IN THE AMERICAS is your introduction to the Western Hemisphere. You live in the Western Hemisphere and you have many, many neighbors. You share so many ideas and products with your neighbors that it is important to know about them. Your neighbors in the Western Hemisphere live in many countries. All these countries are grouped together on large masses of land called continents. The continents of North America and South America and the islands nearby are the Western Hemisphere.

You know that you live in North America, but do you know that you share that continent with the people who live in Alaska, Canada, Newfoundland, Labrador, Mexico, and the Central American republics?

You also will learn about the people of South America, a continent with thirteen countries.

You will learn about Greenland and Iceland, two of our neighbors which lie off the North Atlantic Coast.

You have read in the other geography books in this series about OUR NEIGHBORS AT HOME and NEIGHBORS AROUND THE WORLD. From these you have learned something about the ways in which people earn a living, provide food, clothing, and shelter, use transportation and communication, exchange ideas, enjoy leisure and recreation. You have had glimpses of people in different communities and in different lands. You have learned about the earth and the "strips," such as the forest lands around the earth or the corn belt lands; you have learned about the hemispheres, the continents, and the bodies of water. You have learned about direction, the poles, and the Equator.

Now you are going to study each of the countries in the Americas and the islands which are near the Americas. You will see the ways in which the countries are similar or are different. You will see these similarities or differences in the crops and products, in the ways of earning a living. You also will discover much about the ways in which people live in each of the countries.

Do you know that we who live in the United States are not the only "Americans?" We in the United States took the name and applied it to ourselves. But all people who live on the North American and the South American continents are "Americans." So we share a common name with all our neighbors.

We in the Americas also share two big oceans. We trade products. We share ideas. We are similar in many ways. But there are some differences, too. We live in different kinds of environments. We use different languages. We follow different customs.

Since the Americas stretch from the North Pole to the South Pole, you can learn more about the strips around our globe. You study each country as a separate unit. Some of the countries are so large that they must be studied part by part. You will see how the strips not

2139134

only make countries different but sometimes make parts of a country different.

There are so many interesting facts to tell about each of the countries! You could spend years studying about one country. However, NEIGHBORS IN THE AMERICAS is written to give you an understanding of the entire hemisphere. In this book the authors have selected the facts which tell you the story of each country and the ways in which these countries work together. The authors have had years of experience in writing geography books. The chief purpose of the authors has been to gain your interest in geography through a readable story.

How well can you read? In this book you will have opportunities to improve your reading. This book not only is a book on geography but also is a reader. You will have many opportunities to learn new words; the vocabulary drills with the chapters will help you learn new words. If you do not know how to pronounce some of the words or are not sure about their meanings, turn to the Index and Glossary at the end of the book.

Do you know where countries, states, cities, rivers, and mountains are? To help you learn more geography, you will find in a special 32-page Atlas at the back of the book the colored maps of each continent, detailed maps of the United States, World maps, and Polar views. Use these as you read about each country. You have a single, ready-reference for all the important maps for your study of geography. Form the habit of turning to the Atlas every time you say to yourself, "Where is that place?"

To help you understand and enjoy this book, the authors have introduced the following features:

1. Colored "production panels" which show you how a raw material is made into a finished product.
2. Picture graphs which show the population per square mile of each state or country.
3. Graphs to show temperature and rainfall at certain selected locations in the Americas.
4. Maps of the metropolitan districts of the United States. This is an important new geographic fact which you will find interestingly illustrated and explained.
5. Photographs are an important part of the story. You should study them while you read the text.
6. Activities which link pictures and text; activities which help you check on your reading in the chapter; activities which summarize the ideas of the unit; and activities which draw out relationships between the unit and previous geography experiences.
7. Bibliographies to give you clues to other interesting books to read.
8. Statistical tables to give information about the Western Hemisphere.

NEIGHBORS IN THE AMERICAS is a book which has interesting, carefully selected facts told in a readable manner so you can travel widely in the United States and in those countries which are our neighbors in the Western Hemisphere. Happy journeys!

The Editors

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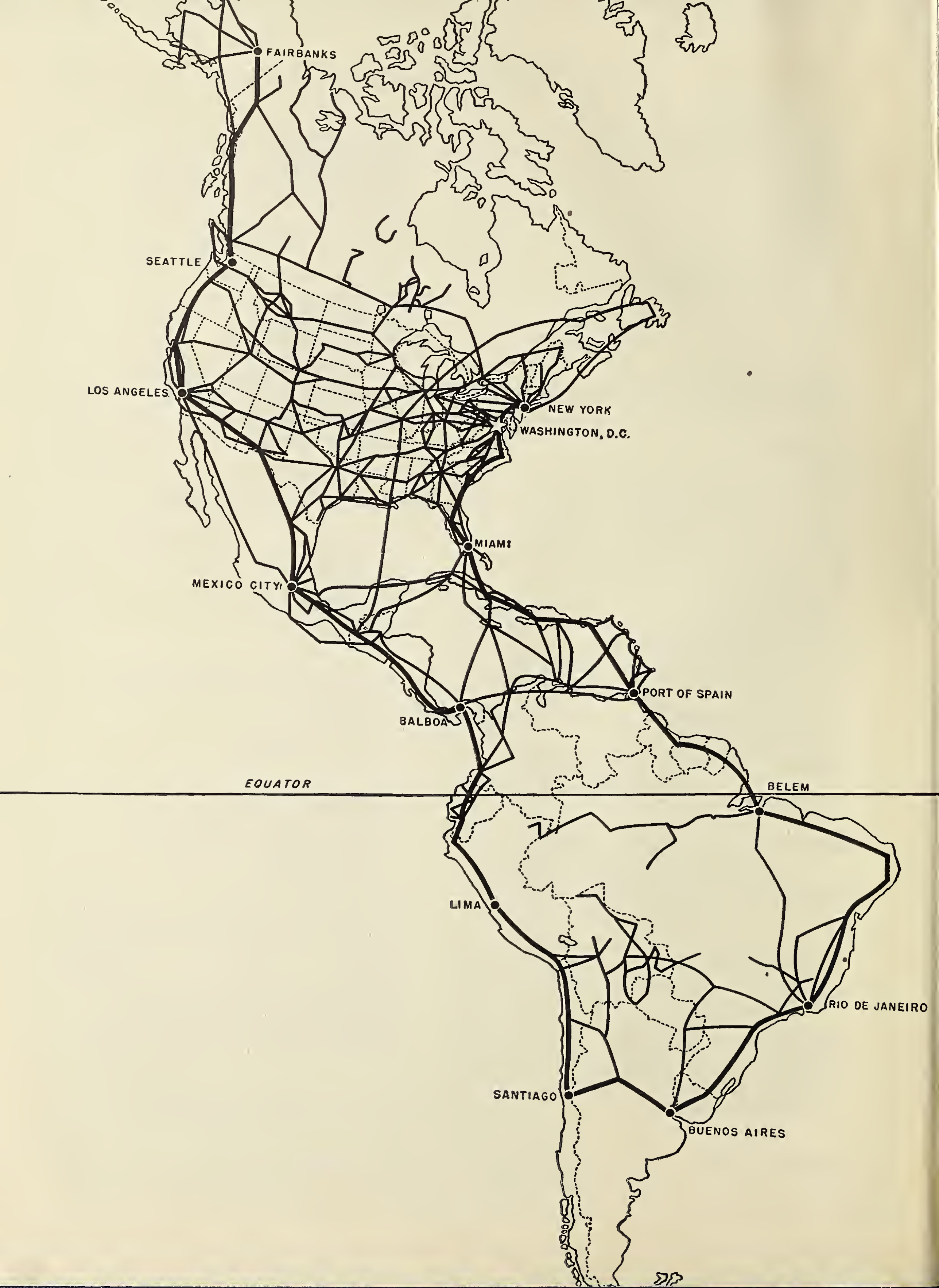
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LOS ANGELES
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MIAMI
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EQUATOR
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LIMA
RIO DE JANEIRO
SANTIAGO
BUENOS AIRES

Taca Airways, Inc.

Like giant birds, planes travel over land and water. The map on the facing page shows the airways of the Americas. Trace the two routes to Buenos Aires, from Fairbanks and New York City.

Unit I—Seeing the Americas from the Air

Chapter 1

Two Plane Routes to South America

South America! It is ten minutes before five o'clock one afternoon in June, and the plane from New York is due to arrive at the airport in Buenos Aires at five o'clock. One of the passengers is Bill Brown, eleven years old. Bill is flying from New York to Buenos Aires to meet his father, who has flown down the west side of the Americas from Fairbanks, Alaska. Bill is looking out the window beside his seat because he wants to see everything that he can on his first airplane journey. The plane is flying over water now. But ahead Bill sees a city that is spread out for miles over a wide level land.

The plane circles and comes down at a large airport. "Buenos Aires at last," says Bill, as the plane stops on the runway. "Hello, Dad," and Bill rushes to meet his father. "Did you have a good trip?"

"Fine," says Mr. Brown. "I left Fairbanks last Friday, and here I am."

Buenos Aires, Argentina, is the "New York City" of South America. What do you think this means? A subway line operates under this street.

"I left New York last Saturday, and here I am. I'm mighty glad to see you, Dad. I haven't seen a person I know since I left New York, but I had a wonderful trip. I was able to see about everything."

Mr. Brown and Bill leave the airport in a taxi. Mr. Brown, a writer, has spent several months in the Northlands, gathering information for his new book. He plans to collect material in Argentina during the months of June and July. Bill is spending his vacation with his father.

"Last Saturday, in New York, it was midsummer," says Bill. "This is only Thursday, but here I am in South America, and it is midwinter. This morning, in Rio, it was warm, like summer. It was warm all the way from New York to Rio, and now, in Buenos Aires, my overcoat feels good."

"Look, Dad, those shade trees along the streets are as bare of leaves as our trees are during winter in New York."

"Yes," says Mr. Brown, "it is winter here all right! When we in the Northern Hemisphere are having summer, the people in the Southern Hemisphere are having winter. I found winter yesterday afternoon in northern Chile. I've had winter all day, for I slept last night at Santiago, Chile. I had some chilly weather in Mexico, too. I expect you saw a lot of people bathing in the sea at Miami, Florida."

"Yes, I did," says Bill.

"Well," continues Mr. Brown, "while they were swimming in the warm sea, I wore my overcoat as I walked about the City of Mexico in the evening. This city is nearer the Equator than Miami is, but it is on a high plateau. The city is a mile and a half above sea level and, as you know, the farther up we go the cooler it gets. For that reason overcoats are needed in Mexico City, while swimming is in order in Florida."

"Oh, look, Dad! Look at these buildings we are passing! Just look at them! They are as fine as any in New York."

"They are indeed," replies Mr. Brown. "These buildings are not crowded together as buildings are in New York. Buenos Aires is built on a level plain, where there is room enough for a city to spread out. New York is on a narrow island."

Bill and his dad come to the hotel, unpack their bags, and have dinner. "Well, Bill," says Mr. Brown after dinner, "as you look back on it, what was most outstanding in your journey from New York to Buenos Aires?"

"Forests, Dad. Forests and the greenness. I could see forests somewhere every minute of the way from New York to Miami. I saw forests on every West Indian island we flew over. And South America! It seems to me that South America is almost all forests. In the United States I saw patches of woodland and patches of farms. In some places I could see villages and towns and railways and highways. But not in South America! Why for hours and hours I saw only forests—not a town, not a road, and, only once in a while, a small clearing. Southern Brazil is more like southern United States, but I am surprised that there is so much empty land in South America."

"Eastern South America certainly differs from western South America," says Mr. Brown. "Most of my South American journey was over land which has so little rain that there are no trees except along streams, and no farms except where men irrigate. We see the earth is not planted and the color is brown or yellow. For two whole days I flew over the treeless land—all the way from the western tip of South America until I was halfway from Santiago to Buenos Aires.

"There was another long stretch of brown land from Los Angeles to Mexico City. Few people live there.

"But I saw almost continuous forest land between Fairbanks and Seattle. There the people are as scarce as you found them to be in Guiana and in northern Brazil."

"Islands," says Bill, "islands. I can shut my eyes and see islands—green islands in the dark blue sea. One very interesting part of the trip was flying over the West Indies. Some of the islands must be 100 miles across, some seem to be about 10 miles, some only about a mile across, and some islands are no bigger than a farm or even a city

Parts of Mexico are indeed beautiful. Here we see the ruins of an ancient aqueduct, the countryside of farms, and mountain ranges. This spot is located a few miles northwest of Mexico City.

Ewing Galloway

Opposite ends of the Americas present contrasting scenery, as these pictures show.

block. All have green forests; all except the tiny ones have farms, villages, and towns. There must be a lot of people on the West Indian Islands."

"I saw many islands, too," says Mr. Brown. "They are along the coast of Alaska and western Canada. They are like the West Indies in one way and very unlike them in another way. They are like the West Indies because they are forest-covered from far up the slopes right to the water's edge. But people? There are almost no people! Many of the islands do not have a single person, except perhaps here and there a few families of Indians who live by catching fish and fur-bearing animals.

"Did you see any snow, Bill?"

"Now, Dad, you are joking. You know I didn't see any snow. There is none here in Buenos Aires, and the rest of the trip was in summer weather."

"Well," says Mr. Brown, "did you see any high mountains?"

"Not many mountains," says Bill, "and not very high ones. Everything seemed very flat all the way from New York to Miami. Nearly all of Cuba is flat. There are some mountains in Haiti and some in eastern Brazil, but not high ones and they are covered with forests."

"If you were to fly to Fairbanks by the route I came, you'd see plenty of mountains and a lot of snow," says Mr. Brown. "The tops of the Andes are snow-covered almost the whole length of South America. I saw snow north of the Equator and I saw snow near the Equator. I saw snow from time to time all the way from the Equator to Santiago. I flew over the snow-capped Andes Mountains coming from Santiago to Buenos Aires. My route followed close to mountains almost all the way from Fairbanks, Alaska, to Santiago, Chile. I saw snow-capped mountain peaks in western Canada and I saw several others off in the distance in the United States.

"At one place I saw ice. This was in the high mountains along the coast of Alaska. A whole valley was filled with ice. The ice, a glacier, was slowly creeping down to the sea. At the end, big blocks of ice broke loose from the glacier and floated in the sea."

"Well, Dad, it seems that you were having a green, brown, and white trip, while I was having a green and blue trip.

Lanks from Paul's Photos

There are thousands of miles between Canada's snow-covered mountains and Chile's desert lands.

"Here is another thing that interested me very much," continues Bill. "It was the great airport at Natal, near the eastern point of Brazil. I saw a plane start off over the ocean for Africa as another plane came in from Africa. The pilot told me thousands of American soldiers went to war over that route."

"I saw planes setting off across the sea, too," says Mr. Brown. "At San Francisco planes go every day to Hawaii and to other places in the Pacific Ocean. Perhaps you and I will fly across the ocean some day."

"That will be great fun," answers Bill, "but I'll tell you something, Dad. Before I travel much, I want to learn a lot about the countries I am going to see. That will make it so much more interesting."

Bill gets out his maps and traces his long journey. He looks at the map of North America and the map of South America. Then he sees something he has not noticed before. "Look, Dad," says he, "both North America and South America are alike in several ways. Both have high mountains and plateaus near their western coasts. Both have lower mountains and plateaus near their eastern coasts. And look, here is another way in which they are alike—South America has great plains and river valleys between its mountains. The United States and Canada also have great central plains and wide river valleys between their highlands."

"That is true," says Mr. Brown. "The surface patterns of the two Americas are somewhat alike. But there is one way in which the two continents are not alike. That difference is in the time they have their seasons.

"You know, son, I have learned about many kinds of land, weather, people, and the ways people make a living. Some of the things I learned while traveling, but I also learned much about them through reading. Reading is just another way of traveling."

Bill thinks about his journey, then he says, "I can keep on traveling in the book way. If I study geography I shall learn a lot about every country in North and South America."

Bill thinks of what he will tell Mother and his friends at home about this wonderful trip. Then he says, "Dad, how

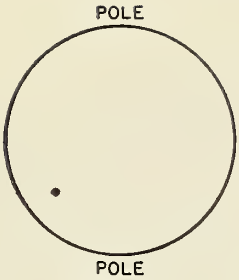


FIG. 1

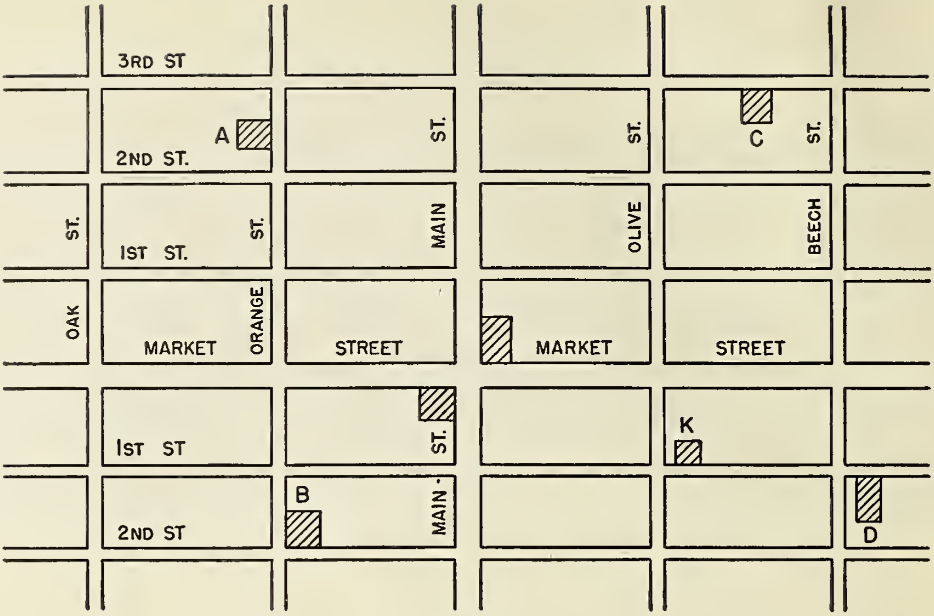


FIG. 2

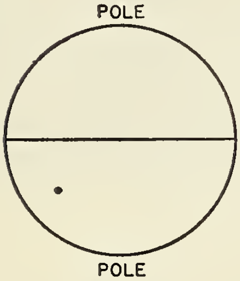


FIG. 3

can I tell my friends where Buenos Aires is? I know it is in Argentina in South America, but isn't there some other way to tell where a place is located?"

"Yes, Bill, there is a good way to locate places. I will draw some diagrams to explain how it is done." The diagrams and explanation Mr. Brown gave Bill are on these two pages.

1. List three ways in which North and South America are alike.

2. What is the chief difference between North and South America? Discuss with your classmates what you think is the reason for this difference.

3. Use a globe or a map to help you understand that the Americas are alike and yet are different.

   a. Locate and learn the names of the western mountains in each continent; the eastern mountains.
   b. Locate these river valleys—Mackenzie, Mississippi, Amazon, Paraná. Which of these valleys did Bill or his father see on his journey?
   c. Locate and name four of the West Indian Islands.
   d. Locate the bodies of water that touch the Americas.
   e. Look carefully at the location of the two continents. What part of North America is directly north of South America?

Where is Buenos Aires? Figure 1 is our globe. There is a spot marked on it. Can you tell someone where that spot is located? You cannot tell where it is located until you have a place to start from.

Figure 2 shows part of a city. Find Main Street; Market Street. Tell the names of the other streets. Find the house marked A on Orange Street. This house is No. 220 Orange Street, N. W. The house B is at the corner of Orange and Second Streets, Southwest. Its number is 145 Orange Street, S. W.

The house C is number 120 Third Street, N. E.; D is No. 220 First Street, S. E.; K is 115 First Street, S. E.

Market Street and Main Street are starting places. All numbers or locations north of Market Street use the word

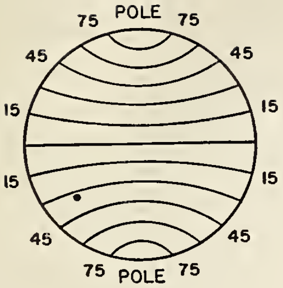


FIG. 4

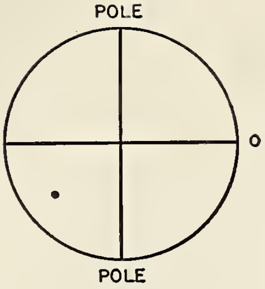


FIG. 5

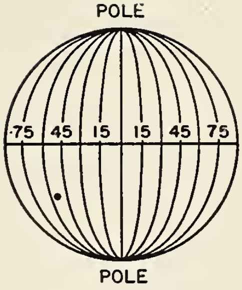


FIG. 6

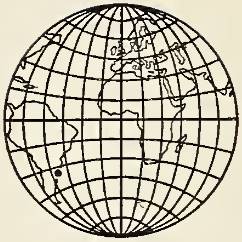


FIG. 7

"north." All numbers or locations south of Market Street use the word "south." The locations of all houses west of Main Street have the word "west," and the locations of all houses east of Main Street have the word "east."

Figure 3 is like Figure 1, with the Equator and the poles marked on it. You remember that the Equator is halfway between the North Pole and the South Pole, and that all of the earth's surface south of the Equator is in the Southern Hemisphere. We say that all places located south of the Equator are in south latitude, and all places north of the Equator are in north latitude. Now you can say that the spot is in south latitude because it is located south of the Equator. But how far south of the Equator is the spot?

Here is a way to measure the distance between the Equator and the spot. Take a baseball and stick a pin or tack somewhere in it to mark the North Pole and another to mark the South Pole. With pen or pencil mark the Equator all the way around the ball.

Mark on the ball a line that connects the poles. Such a line, from pole to pole, goes halfway around the baseball, or halfway around the earth. The part of this line that goes from the Equator to either pole goes one-fourth of the way around the baseball or one-fourth of the way around the earth. It is also one-fourth of a circle.

One way of measuring any circle is to divide the circle into parts called degrees. There are 360 degrees in a circle that goes around your baseball and 360 degrees in a circle around the world.

Look at Figure 3. If you start at the Equator and go to the North Pole, you have gone one-fourth of the way around the world. How many degrees? It is one-fourth of 360 degrees, or 90 degrees. So we say the North Pole is 90 degrees north of the Equator, or at 90 degrees north latitude.

On Figure 4 there is a line 15 degrees north of the Equator. That line shows us where 15 degrees north latitude is located.

Find the line that is 15 degrees south of the Equator. What other lines are on this globe? Where is our spot? It is between 30 degrees south latitude and 45 degrees south latitude. It is 34 degrees south. But we need to know something else before we can locate our spot fully.

Before we can finish locating the spot, we need to have a starting point, like Main Street in Figure 2. Long ago English sailors drew a line on their maps from pole to pole and let it pass through a certain building in the town of Greenwich, near London. That is the starting line. It is called the prime meridian. In what way do you think Market Street and Main Street are somewhat like the Equator and the prime meridian?

On Figure 5 the prime meridian is the heavy black line. On figure 6 we have drawn other meridians every 15 degrees. We can use these meridians to measure distances east of the prime meridian and west of the prime meridian. Our spot is between 45 degrees and 60 degrees, 58 degrees, west of the prime meridian. We say that is 58 degrees, 58°, west longitude. Now we can locate the spot. It is 34° south latitude and 58° west longitude, and its name is Buenos Aires.

1. Use a globe or a map to find the following:
   - a. Equator
   - b. prime meridian
   - c. North and South Poles
   - d. most northern and most southern latitudes of North America; of South America
   - e. most eastern and most western longitudes of North America; of South America
   - f. location—latitude and longitude—of your town or city
   - g. location of the cities Bill and Mr. Brown saw on their airplane journeys

Something to Do

1. Write several paragraphs to explain this statement—Mr. Brown had a "green, brown, and white trip" over the Americas, and Bill had a "green and blue trip."

2. Here is a list of questions for you to think about. Give the best answer you can to each.
   - a. Buenos Aires has few tall buildings; New York City has many skyscrapers. Why?
   - b. Why are there few farms along most of the western coast of South America?
   - c. What is the difference between high plateau and low valley weather?
   - d. Few people live along the coast of North America between Fairbanks and Seattle. Why?
   - e. We think of the regions near the Equator as always having hot weather. If this is true, how, then, can the following statement of Mr. Brown be correct?—"I saw snow near the Equator."

3. Collecting pictures is an interesting and helpful way to study about lands and peoples. Your teacher may want to help you with a class project on picture scrapbooks of the Americas. You could collect pictures about each region as you study it. Discuss with your teacher such a project to decide what pictures you will collect and where to look for them.

4. As you heard about Bill's and Mr. Brown's trips over the Americas, you learned there are different names used for different kinds of land, such as mountain, valley, plateau, and lowland. There are different kinds of water bodies—ocean, lake, river. Below is a list of names that you will meet often in your study of geography.

Your teacher may want you to arrange them alphabetically and to write the names and their meanings in a geography notebook.

village
town
city
state
country
continent
valley
plain
plateau
lowland
highland
forest
glacier

island
coast
inland
stream
river
lake
highway
waterway
airway
spring
summer
autumn
winter

ocean
bay
gulf
harbor
mountain range
hill
canal
irrigation
prime meridian
Equator
latitude
longitude
hemisphere

5. Bill learned many interesting things on his trip over the Americas. As you go with Bill on his book-travels to learn more about each part of the Americas, you may want to keep important and interesting information in a notebook. The first section of the Americas you will study is the Northlands—Alaska, Canada, Newfoundland, Greenland, and Iceland.

Make a list of the things you already know about the countries in the Northlands. Now make a list of the things you would like to learn or know better about Alaska, since this is the country you will study first. Your teacher may wish to make a blackboard list called, "We Want to Learn about Alaska." Your class could then use the list as a study guide.

Pan American Airways

Tons of snow piled on Mt. McKinley make it look like a giant's cone of vanilla ice cream.

Unit II — The Northlands

Chapter 2

The Territory of Alaska

Our neighbor. Betty comes home from school and tells her mother that the geography class is going to study Alaska.

"Alaska?" says Mother. "Then surely you will want to see today's newspaper. It has a review of a new book on Alaska."

Betty finds the review in the paper and here is what she reads:

Book Review

" 'Seward's Ice Box' they called it—foolish people, who blamed Secretary Seward for purchasing Alaska from Russia in 1867 and for paying $7,200,000 for a 'big piece of frozen waste.' But 'Seward's Ice Box' has proven to be a treasure house of gold and other minerals, of valuable forests, of water power, fur-bearing animals, and fish for food. In one year alone, and not a very good year at that, the fish canned in Alaska sold for more than 56 million dollars.

"In 1867 the people of the United States thought that Alaska was a far-off land. But men learned to fly, and

Alaska now seems near. It is about 1,800 miles from Seattle, Washington, to Fairbanks, Alaska, by steamer and by train. The trip takes seven days. But one can fly from Seattle to Juneau, capital of Alaska, in five hours, and on to Fairbanks in about five hours more.

"This book about Alaska tells a wonderful story of this rich territory, and how the airplane is making Alaska a close neighbor to all the countries of the Americas."

1. On a globe or a map trace the steamship and train route from Seattle, Washington, to Fairbanks, Alaska. Now trace the air route from Seattle to Juneau and from there to Fairbanks.
2. In what ways do you think use of the air route can help to develop the wealth of Alaska?

"Alaska — Five Hours Away." Betty hurries down the street to the public library. She wants to find a book about Alaska like the one reviewed in the newspaper.

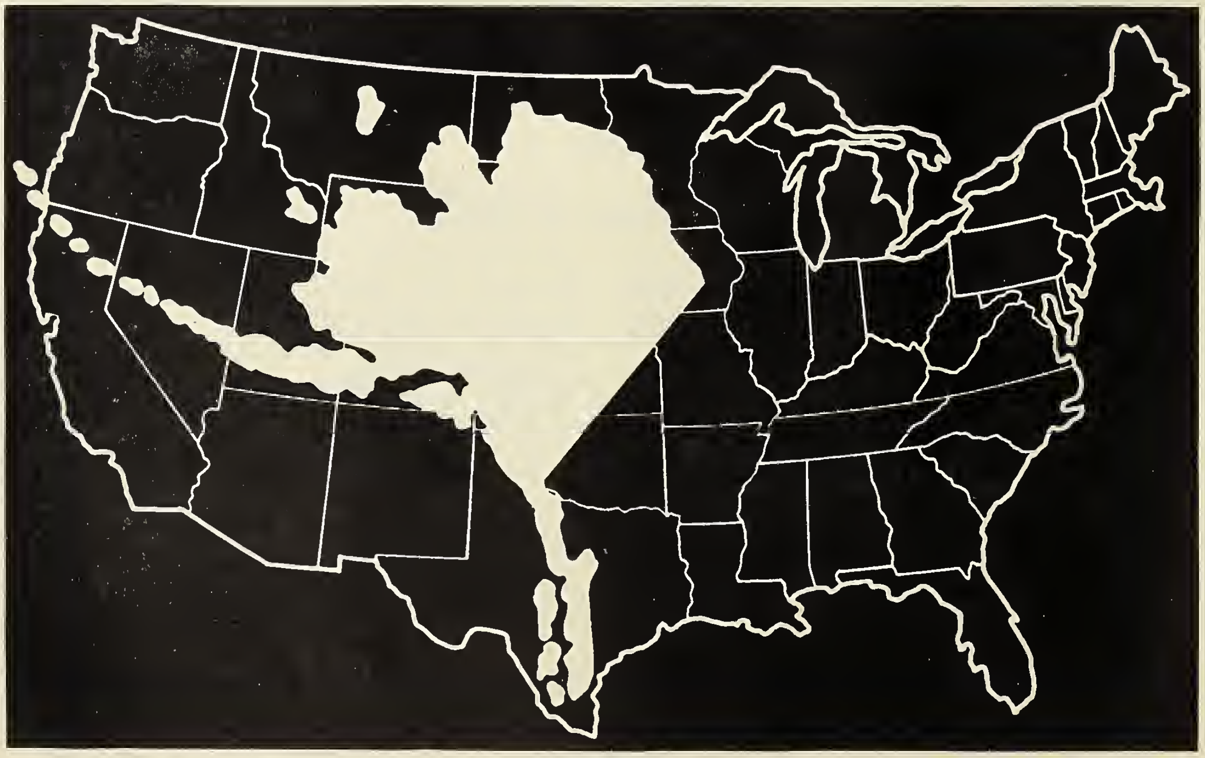
As Betty enters the main reading room, the librarian greets her pleasantly and asks, "What can I do for you?"

"I am looking for a book about Alaska," replies Betty. "Do you have one that tells about airplanes in Alaska?"

Soon the two are looking at several new books. They do not find the one mentioned in the newspaper, but Betty chooses another book that looks to be just as interesting. This book has maps of Alaska and many pictures of this northland country. There are several pictures of planes carrying supplies, and there is a short story about the territory and its people.

That evening, as soon as supper is over, Betty goes to her room to read the new book—"Alaska—Five Hours Away."

A good way to understand the size of a country is to compare it with the United States. The map of Alaska covers just a part of the United States. How do these areas compare in size?



Big and empty. Betty sees a map of Alaska placed on top of a map of the United States. She notes two facts:

(1) The width of Alaska, including part of the Aleutian Islands, is about the same as the distance from the middle of the State of Iowa to the Pacific coast of northern California.

(2) Point Barrow, Alaska, if placed on the boundary between the United States and Canada, would force the Aleutian Islands to cut through the Mexican border of three of our states.

Alaska is indeed a large territory, more than twice the size of Texas, our biggest state. But the United States is more than five times as large as Alaska. Austin, the capital of Texas, has more people than live in all of Alaska.

"Well!" says Betty, "Alaska is twice as big as Texas and has fewer people than one city in Texas. Alaska certainly is an empty land."

A physical and political map of Alaska. The writer of the book says: "Alaska extends over a wide area, has many mountains and valleys, many hundreds of islands, big and little, and many different kinds of weather. With so many differences, we cannot say very much that is true of all of Alaska. So we must divide the territory into smaller pieces and study each piece."

Betty's book has a physical-political map of Alaska. As she reads, Betty refers to this map. The map is a physical map because it shows heights of land by the use of different colors. The physical map shows the sea and other bodies of water by using the color blue. It is a political map because it shows boundaries of countries and the place names of cities.

Betty looks again at the map in her book. This map shows her that Alaska has many high mountains, including Mt. McKinley, and also several large river valleys. Betty draws her finger along the Yukon, the longest and largest river in Alaska. The book says that gold is mined near the cities of Juneau and Nome and at several places along the Yukon River. The hills and mountains of southern Alaska seem to be dotted with gold, silver, and copper mines, and there are coal mines near Valdez.

"A map surely can tell a lot about a country," Betty says to herself.

1. Explain what is shown on a physical map; on a political map. What is the chief difference between the two?
2. Find two rivers on the map of Alaska.

Southeastern Alaska. The first part of Alaska about which Betty reads is southeastern Alaska. She finds it on the map—a narrow strip along the coast. It extends from the southern boundary of Alaska to within sight of Mt. Logan. This is more than 500 miles. In all this distance, high mountains rise up close to the sea. Many of the mountains are topped with snow, even in summer. But they have thick forests of evergreen trees on their slopes, and green meadows here and there, where a bit of level land can be found. However, there isn't much level land.

High up on these mountains are many snow fields and glaciers from which streams tumble thousands of feet into the blue waters of the Pacific Ocean.

Hundreds of islands lie offshore. Some are thickly wooded because there is much rain. Some are bare rock. And between islands and mainland is the Inland Passage—a waterway for ships. Boats can follow the Inland Passage from Seattle to Juneau and beyond, without once going out into the open sea. Betty traces this route on her map.

Winds from the Pacific have a cooling effect on this land in summer. Seldom does the temperature go above 80° F. The sea winds warm this part of Alaska in winter. The ocean never freezes. Winters seldom have zero temperature. Rain is so heavy that some places along this coast have only 21 clear days a year. A man in one of these towns made a joke about the weather. He said, "February is our month of least rainfall, because February has only 28 days."

Many fish come from the sea into the streams along this coast. The town of Ketchikan, in southeastern Alaska, is said to can more salmon than any other place in the world. The salmon is a great traveler. Some of them swim thousands of miles in a few years. The mother salmon swims from the sea up a river to some lake to lay her eggs in cold mountain water. Sometimes she swims up rapids and over low waterfalls and goes as far as 2,000 miles from the sea. The eggs hatch in the icy water. In a few months the young salmon swims downstream to the sea. From that time until she grows up, no one knows where the salmon spends her time. But one day, when the salmon is full grown, Nature tells her to go back to the stream from which she came. She knows the way and back she swims, a trim, silver beauty. Other salmon go with her in a great school. A school of fish is a large number of fish swimming together.

Salmon go far up the streams to the place where they were born. There they lay their eggs and die; and the life story of the salmon repeats itself. If you like big numbers, you can remember that as many as 85 million salmon have been taken from Alaskan waters in one year.

Juneau, Alaska, has been well known for years because of a gold mine named Juneau Mine. But many people in Juneau, as in other parts of Alaska, have found that they can make a much better living by fishing, lumbering, or raising foxes and martens for their fur.

1. Study carefully the pictures of glaciers. Why do we sometimes call a glacier "a river of ice"?
2. Review temperature readings with your teacher. Be sure you understand what 80° F. means.
3. Explain in your own words the effect of the Pacific winds on the climate of southeastern Alaska.

Southern Alaska and the Aleutian Islands. Betty looks at her map of Alaska again. She runs her finger past the jumble of mountains that have Mt. McKinley for their highest peak and comes to Matanuska, on the Alaskan Railway north of Anchorage. Here the University of Alaska has an experimental farm, that is, a farm on which they try many things in order to find what crops can be grown successfully in Alaska and what farm animals can be raised with profit to the farmer. The experimental farm teaches the people what is known about farming this northland country.

Farm families that have come to Alaska from the United States to settle in the Matanuska Valley are very glad to find out what crops they can grow. The Matanuska Valley has a high range of mountains to the north. The mountains keep some of the cold north winds away. Frost rarely comes to the valley after the third week in May, and frost is not expected again until about the middle of September. The summers are mild. And long hours of summer sunlight help produce thirty-pound cabbages and as many as nine tons of

Juneau, the capital city of Alaska, is located on the shore of the Gastineau channel. Government service and the Alaska-Juneau gold mine provide jobs for many of the city's 5,700 people.

potatoes on one acre of ground. The sun shines 14 hours by the middle of April, 17 hours by the middle of May, and there is almost no darkness during June and July.

North of Matanuska is Mt. McKinley, highest mountain in North America. It towers almost 4 miles into the mists, has glaciers on its sides, deep forests lower down on its sides, and tons and more tons of snow piled on the mountaintop, like a giant's cone of vanilla ice cream.

Around and about McKinley is our second largest national park. The land was set aside by our government for the enjoyment of all people from everywhere. In the park, visitors may shoot any animal or any bird they wish so long as they do it with the camera, not with the gun.

Southwestward from Mt. McKinley, Betty's finger points along the Alaskan Peninsula toward Attu Island, farthest west of the Aleutians. Some of these islands have volcanoes that rise as much as a mile and a half, almost directly from the water. Some are active volcanoes—that is, they have openings through which steam, ashes, and melted rock are driven out with much force.

Many of the islands are rookeries. A rookery is a place where millions of sea birds go to lay eggs and raise their young. Here are fog, strong winds, many rainy days, and a climate that few people like. There are patches of grass where there is soil, but very few trees. Sheep are being raised on some of the Aleutians. On other islands of the group, people raise blue foxes. The foxes cannot get away from the island so they are fed and allowed to run free.

1. Give the location of Mt. McKinley, Matanuska, and Anchorage.

2. How many weeks are there with no frost in the Matanuska Valley? How many days are there in this growing season?

3. How big is an acre? Use your dictionary to help you if you do not know. You may want

Philip Gendreau

These Indian boys live in the village of Carcross in the Yukon. Carcross means caribou crossing, for here hundreds of thousands of caribou used to pass each year.

to measure an acre of ground near your school or home.

4. How many pounds of potatoes are there in nine tons? Nine tons to an acre is a very good yield of potatoes. What do you think helps to produce such a large crop?

Bering Sea and Western Alaska. The Bering Sea lies north of the Aleutians. Betty looks at the map and finds the Pribilof Islands in the Bering Sea. These islands are the summer home of the fur seals that provide the sealskin coats which girls like to wear. Nearly three million seals, the largest seal colony on earth, come to the islands in May each year, and leave again for the South Pacific in August. During their stay on the islands, the young seals are born and learn how to take care of themselves in the water. Men go among the animals and kill off the older males. So carefully is this done that the herd is getting larger each year.

There are many reindeer in western Alaska near the Bering Sea coast. This land is too cool for farms, but the deer eat moss, grass, and bushes. Even the United States Government is a reindeer farmer, with thirty thousand animals in its herd. Reindeer provide the Eskimos and Indians with meat, and with fur for clothing, boots, mittens, sleeping bags, and many other things. Eskimo and Indian women know how to sew leather and fur, so they have been employed to make suits of reindeer skins for our aviators. The suits keep out the cold of 60° below zero.

1. Why do you think seals go to the South Pacific during our winter months?

Arctic Alaska. North of the Brooks Range of mountains in north Alaska lies the tundra, or treeless plain of the Arctic. Snow may fall almost any day in the year on the tundra. During the short summer the ground thaws to a depth of a foot or two, grasses spring up, flowers bloom, and the tundra is a mass of color—red and yellow, blue and white. Water stands about in pools. Mosquitoes hatch in the waters of the pools. Millions of mosquitoes! So many mosquitoes that someone has said the only way Alaska could have more mosquitoes would be to grow smaller mosquitoes. Millions of birds fly in from far away, some say from South America. The birds lay eggs, teach their young to fly, and get ready to fly southward again.

Ships may get through the ice in the Arctic Sea and reach Point Barrow by August 1, but all ships must be away by mid-September, or get caught in the ice pack and stay until the next year. After September the days get shorter rapidly, the weather grows very cold, and then comes the long arctic night.

A new governor, on being sent to Alaska, said to a friend in the territory, "How is living here in the winter? Don't the long, dark nights bother you?"

"What long, dark nights?" asked the friend. "Alaskan nights are not dark. The snow reflects light from the moon and the stars, and several nights a week we have the aurora borealis." The aurora, or northern lights, are bands of light that often shine in the northern sky.

1. On a globe locate the tundra in Alaska.
2. There is an area of tundra all around the world in the Arctic. Can you trace this cold, treeless, arctic plain through Asia?

Central Alaska. This large piece of Alaska lies chiefly in the valley of the Yukon River and of the Tanana and other streams that flow into the Yukon. Betty traces these rivers with her finger on the map. Here the short summers are hot. Temperature in the daytime may go to 90° or even higher. The winters are long and very cold. The temperature is often 40° below zero.

For years the people in central Alaska have made their living chiefly by mining gold, copper, and other minerals, and by hunting the caribou and trapping fur-bearing animals such as the beaver, muskrat, mink, and ermine. These two industries will continue to employ most of the people who live in this heartland.

Now some farmers have come to central Alaska, especially in the valley of the Tanana River. As in the Matanuska Valley the hot summers and long hours of daylight permit the farmer and his crops to work overtime, double time in fact. Large yields of potatoes and other vegetables reward the farmer, as do crops of oats and other grains. There are plenty of big sweet strawberries and other small fruits. There are many wild berries that are good to eat. The farmers

Almost countless numbers of seals live on the shores of Alaska and the Pribilof Islands. The sea-lion is the largest of the eared seals; it reaches 13 feet in length.

Black Star

in Alaska get high prices for their produce. They do not have enough grain or milk or butter for the Alaskan people. Some of it must come from farms in the United States, and this makes Alaskan prices high—30 cents a quart for milk.

Some farmers in central Alaska and in other parts of the country do not want to be bothered with crops, or cows, or chickens. "We can raise a silver fox or black fox or a mink," they say, "and sell its skin for more than a neighbor farmer can get for his cabbages, or his milk, or his chickens." These farmers are called fur farmers. Fur farming is a new industry. In the far north, the cold weather causes thick, glossy pelts that sell at a good price.

1. Why do you think central Alaska is called the "heartland"?
2. Name the three industries of central Alaska.
3. There is a game of baseball at Fairbanks each year at midnight on June 21. How would you explain this?

"Airplane Land." We might almost call Alaska "Airplane Land" because the airplane has made such great changes for those who live there.

There are so few people in Alaska and they are so far apart that they do not have enough money to build roads for automobiles over most of the country. So you can easily see that travel in Alaska has not been easy. In summer, when the ground thaws, it is muddy. This makes traveling on land very difficult, but steamboats go up and down the Yukon and the Tanana. In winter the ground freezes, lakes freeze, rivers freeze, and when snow falls, sleds can go anywhere, except where it is steep, or too thick with brush. Before the airplane came, Alaska was a land where people traveled by water in summer and by sledge in winter. The dog has been the horse of Alaska, and the sledge has been the wagon. Automobile roads are still few and far between. The one railroad cannot serve much of Alaska, but now planes have changed things greatly for all of Alaska.

In the old days, if a man wanted to go from Fairbanks to Nome in winter, he would have had to hire a man with a team of dogs. They would be out in the cold and blizzards for several days and nights. The cost would be several hundred dollars. Now an airplane will take a passenger there in an afternoon, for much less money.

Before the airplane came, the prospector might spend weeks getting to the spots where he wanted to hunt for gold. Now the airplane will take him in a few hours. We take off our hats to the "bush" pilots. We might say that their little one-engine airplanes are the taxis of Alaska. These men often fly without instruments to every part of Alaska. They carry the mail. They take passengers. They take supplies. They take in medicines and carry sick people to hospitals. In the summer the small planes can land on very small airfields, perhaps on a sandy beach, on a lake or river. In winter, with skis, they can land almost anywhere. Some of these bush pilots have regular rounds and drop supplies to a farmer or miner without ever stopping their planes. They have dropped even machinery for a gold mine. The machinery was wrapped in mattresses to keep it from breaking and was dropped far up on a mountain.

If you look at a globe, you will see how close Alaska is to Asia. There are several air paths from the United States to places in Asia by way of Alaska. This means many new landing fields will be built in Alaska to take care of the planes; it means that new hotels will be needed to take care of the passengers who will stop a night or longer. Alaska has, or will have, jobs for many more people than are there now.

1. Write a story about the importance of airplanes in Alaska.

Something to Do

1. List five facts about Alaska to prove it is a "treasure house."

2. Use the figures in the appendix on size and population to prove the statement, "Alaska is an empty land."

3. The life story of the salmon is very interesting. Prepare a talk about salmon, salmon fishing, or salmon canning. You can find information on your topic in an encyclopedia or in other reference books.

4. Give two examples of the practice of conservation, that is, the protecting of wild life, in Alaska. Do you think conservation should be practiced? Give reasons for your answer.

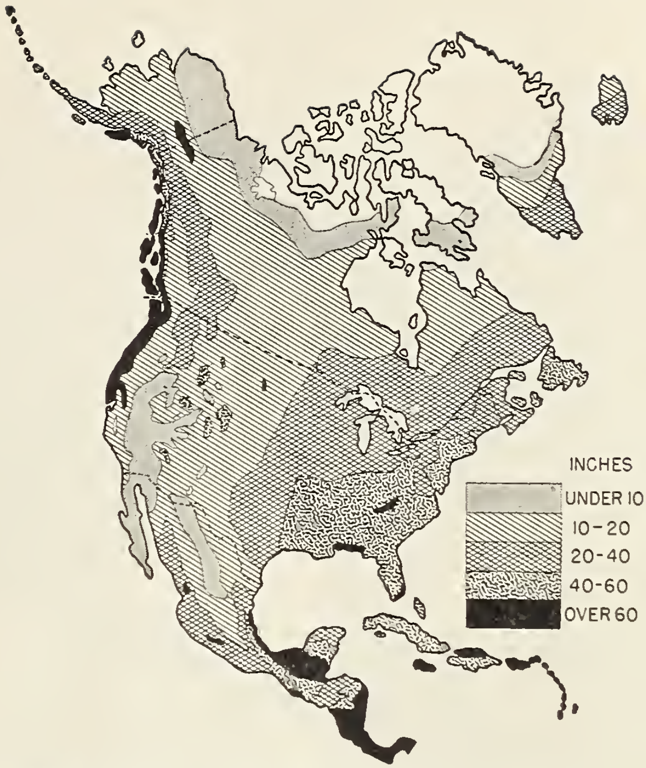
5. Temperatures in some parts of Alaska are very high in summer and very low in winter. Ask your teacher to help you study thermometer readings. You will need to understand such things as using plus and minus signs to indicate temperatures above and below zero. Discuss with your classmates the terms, "even temperatures" and "extreme temperatures."

6. You may want to start a scrapbook of news clippings or collect pictures about the countries you are studying. For your picture book try to find a picture of at least one of these:

Goldmining in Alaska
Reindeer in Alaska
Mountains in Alaska
Airplanes in Alaska

7. Here is a list of terms used in this chapter on Alaska. Write the meanings of the words and phrases to show that you understand them. Your teacher may want you to write them in your geography notebook.

a. Inland Passage
b. school of fish



The amount of rain that falls on an area has much to do with the way in which that land can be used. Study carefully this key and map for the different yearly amounts of rainfall.

c. experimental farm
d. rookery
e. active volcanoes
f. northern lights
g. glacial streams
h. physical-political map
i. produce
j. sledge

8. Name five Alaskan towns or cities; tell in what part of Alaska each one is. Tell an important or interesting fact about each.

A Short Quiz

Copy the following sentences. Fill each blank with the proper word.

1. The United States is ____ times as large as Alaska.
2. Alaska is rich in ____, ____, and ____.
3. ____ is the capital of Alaska.
4. High mountains with snow fields and glaciers can be seen in ____, Alaska.
5. Farming is carried on in the ____ and ____ valleys.
6. Pribilof Islands in the Bering Sea are the summer home of the largest ____ colony on earth.

Some of the work of the glaciers is seen in the mountains and valleys, lakes and streams of Canada. The photograph shows a part of Jasper National Park in Alberta.

Chapter 3

Canada and Newfoundland

Peace, friendship and good will. For a distance of almost 4,000 miles our country, the United States of America, looks across the northern boundary at its good neighbor, Canada. There are on either side of this long dividing line no forts. Machine-gun crews are not on guard. Flyers do not stand ready to man their bombers or fighting planes. Nor do submarines and surface warships lie in harbors to protect one country from the other. Canada and the United States continue to show the world that two groups of people, independent countries, are able to live side by side in peace, friendship, and good will. United States and Canada are close neighbors. Their long side yards touch, but the owners do not quarrel or fight.

1. Study a physical-political map of North America and tell what parts of the boundary between Canada and the United States are natural boundaries. What is a political boundary? What oceans and lakes partly surround Canada?

2. Locate Canada by giving its most northern and most southern latitudes; its most eastern and most western longitudes. Locate Juneau and Fairbanks, Alaska.

A family of nations. If you like big words, Canada is a member of the family of nations known as the British Commonwealth of Nations. We may also say Canada is a part of the British Empire.

England is the Mother Country. Canada, Newfoundland, Labrador, British Honduras, and some islands in the West Indies make British North America.

Canada is a dominion. British dominions are independent countries, as the United States is independent. But the dominions are also a part of the British Empire. The dominions have the King of England for their king. The King sends a Governor General to Canada, but the people of Canada make their own laws by action of their representatives in the Canadian Parliament.

Canada is larger than is the United States plus Alaska.

The island of Newfoundland is about as large as the State of Ohio; and Labrador, on the mainland, is about the size of Nevada. If Canada, Newfoundland, and Labrador were placed on Europe, they would almost hide the continent.

1. Use the appendix to find the number of square miles in Canada, in Newfoundland, and in Labrador. Compare their sizes with your own state. Perhaps your teacher will want to help you measure a square mile.

We look at the map pattern. The map of North America shows that the United States and Canada are somewhat alike. The eastern highland, which we call "Appalachian," continues as rocky, forest-covered hills all the way to the Gulf of St. Lawrence. In the west, the Pacific highlands continue into British Columbia, Yukon, and Alaska. The great central plains of North America extend from the Gulf of Mexico to the Arctic Ocean. These plains are very wide in the United States. They are not so wide in southern Canada. They are still less wide in the Mackenzie River Valley.

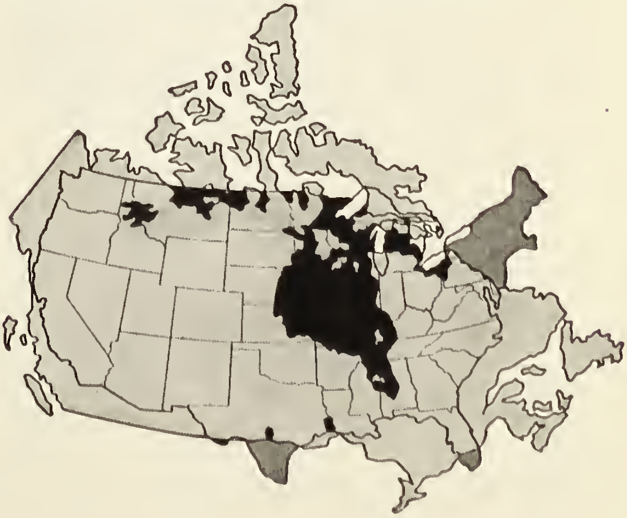
One big piece of Canada, almost half of the Dominion, is not like any large part of the United States. This is the Laurentian Plateau — a fairly level, rocky, tree-covered land about 1500 feet above sea level.

You would not want to try to farm here except in a few fertile spots. After you had cut down the trees and cleared the land, you would find most of it very stony and with only a very thin covering of soil over the rocks. And even worse, the soil might not be rich soil.

The miners have found on this plateau the world's greatest nickel mines. And if you wanted to prospect, that is, hunt for minerals, you might find gold, silver, copper, and no one knows how much other mineral wealth. Many deposits of metal have been found. Many mines have been opened.

If you had a job making paper for newspapers, you would find much of this big plateau covered with trees, millions

The map of Canada spills over the edges of the map of the United States. Check the appendix for the area of Canada and of the United States.

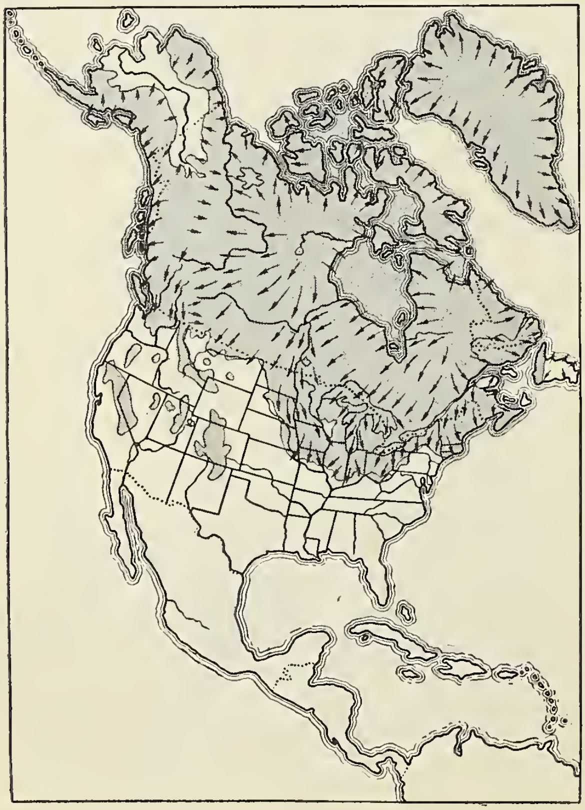


of trees good for pulp. Pulp is ground up wood from which paper is made. And scattered about in these Great North Woods are thousands of lakes and tumbling streams. They would provide plenty of power to run your papermaking machines.

1. Use a globe or a physical map to understand the ways in which Canada and the United States are alike. Trace the eastern highlands, the Pacific highlands, and the great central plain.
2. Review your definition of a plateau.
3. Why is the Laurentian Plateau better for miners and lumbermen than for farmers?

The Great Glacier. "Why all these lakes?" you ask. The answer is that the glaciers made them. Very many years ago, as we count time, most of northern North America was covered with ice, hundreds of feet thick. This great sheet of ice moved southward very, very slowly. Perhaps it moved only a few inches a year. As it moved, the ice scraped the earth and carried some of the soil and some of the surface rock with it. This happened in all of the Laurentian land. Rocks and soil were pushed about so as to form dams across valleys. The dams held back the water which filled the valleys and made them into lakes. Then as a stream flowed over the dam that a glacier had made, there were rapids and sometimes waterfalls.

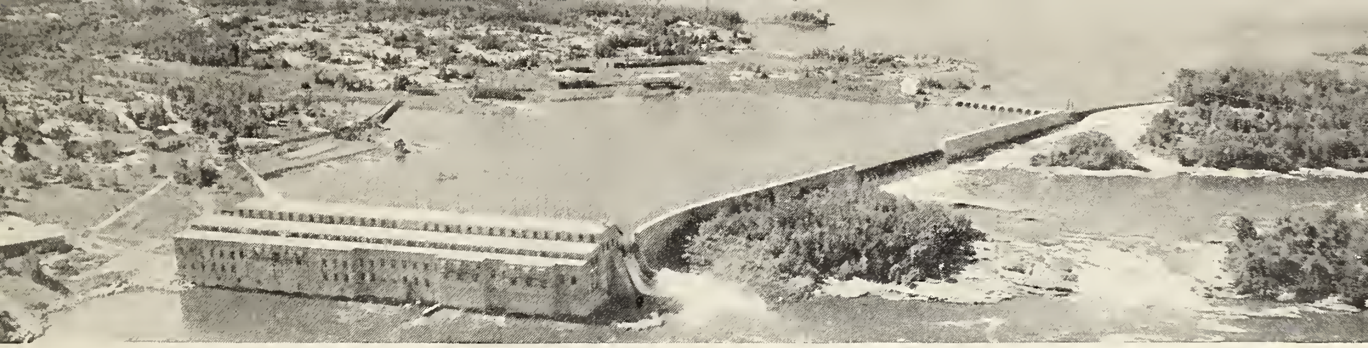
This map shows the part of North America that was covered by the ice sheet or glacier.



Thus Canada and northeastern United States have thousands of lakes and streams with thousands of rapids and thousands of waterfalls.

Years passed. Thin soil formed on top of some of the rocks. Trees grew there. Then came man to hunt for minerals in rocks that the glacier had uncovered, to cut down whole forests for paper, and to make power from the force of falling water.

Water power. Fill a bucket with water and carry it a short distance. Water, you will find, is heavy. And when this heavy liquid is allowed to flow against a wheel with blades shaped somewhat like a pin wheel, the blades spin, and the hub of the wheel turns. Attach this spinning wheel, called a turbine, to a machine called a dynamo, and you get electricity. Why? That question has not as yet been answered. We do not know just what electricity is, but we know how to use it. With a water wheel and dynamo, we catch the force that is flowing water and change it into the force that we call electricity. Then we carry the electricity on a wire and use it in many ways to provide power for industry and home.



Dept. of Mines and Natural Resources, Winnipeg

Hydro-electric plants on the Winnipeg River provide power to turn the wheels of Winnipeg's industries. This city has the cheapest hydro-electric power in America. Explain the phrase "harnessing a river."

1. You may want to read more about turbines, dynamos, and water power in an encyclopedia.

Leif Ericson to John Cabot. Probably the first white man to see Canada was Leif Ericson. He sailed from Norway by way of Iceland and Greenland and landed in Canada, but we do not know exactly where. Almost five hundred years later, on June 24, 1497, John Cabot, Captain of an English ship, sighted land, probably Cape Breton Island. Cabot thought he had reached Asia, and soon would have plenty of silks and spices to take home from China and the East Indian Islands. How disappointed he was to find nothing he wanted except fish!—so many fish that he said, "They sumtymes stayed" his "shippes."

The Grand Banks. Cabot had found by chance the "Grand Banks," the richest fishing grounds in all the world. A "bank" is a shallow place in the sea. Fish come to feed on the shallow bottom, and men find it easy to catch them there. The Grand Banks lie about 50 miles east of Newfoundland where two currents in the ocean meet—the cold Labrador Current from the north and the warm Gulf Stream from the south. Each current carries great quantities of food for fish. Cod and other fish come to the banks from the open sea, have a feast, grow fat, and then get caught for your dinner and ours.

1. Use maps:
   a. To locate the island which Cabot found in 1497.
   b. To trace the two ocean currents that meet east of Newfoundland.

New France becomes Canada. Fishermen flocked to the banks from Europe long before any Europeans made homes in Canada. As many as 150 French ships alone could be found there at one time. The crews of these ships fished, and they also traded with the Indians for furs. Then in 1536 came Jacques Cartier, employed by the King of France to search for "The Indies."

Cartier sailed up the St. Lawrence River, until he was stopped by swift rapids in the stream. He went ashore, climbed a nearby hill, and named it Mount Royal. Near this spot today stands Canada's largest city, Montreal.

Following Cartier came Samuel de Champlain, Canada's good friend. He not only founded Quebec in 1608, the first permanent settlement, but encouraged many Frenchmen to go out and make a new France in Canada. They came, and with them came trouble. France said, "We own Canada; our people are there." England said, "No, we own Canada. Cabot discovered the country." Finally, early one morning in

September, 1759, General Wolfe and his British Army surprised and defeated the French on the Plains of Abraham, just west of Quebec, and Canada became a part of the British Empire. That was nearly two hundred years ago, but the people of the city of Quebec and the lower St. Lawrence Valley still speak the French language. The French-Canadians go to their own churches and live much as their ancestors did in the old country. But first of all they are Canadians—working in many ways with the other peoples of Canada (chiefly British) to make the Dominion a better homeland in which to live and make a living.

A Frenchman by the name of Voltaire, who lived at the same time George Washington lived, said, "Canada is a patch of snow inhabited by barbarians, bears, and beavers." As you study Canada and Newfoundland, you will find how mistaken a really great man can sometimes be. But Voltaire was right about a large part of Canada.

Today the whole of Canada has somewhat less than twelve million people, fewer persons than live in the State of New York alone. So you see Canadians have living space to spare. About half of these people live in the tiny part of the Dominion that borders the Great Lakes and the upper part of the St. Lawrence River. Northern Canada is very empty indeed—much of it has about one person to each hundred square miles of country. It is, as Voltaire said, chiefly inhabited by bears and beavers.

1. Much of northern Canada has only one person to each hundred square miles of country. Discuss with your classmates the meaning of persons per square mile.
2. How many persons do you think live on a square mile near your school?

Something to Do

1. Look for these words in your dictionary. Write sentences using each word correctly.
    - a. boundary
    - b. empire
    - c. commonwealth
    - d. nation
    - e. dominion
2. You may want to read more about the British Empire to find which parts are dominions and which are colonies.
3. Use maps, pictures, and the text to prepare a talk on glaciers.
4. The Great North Woods lie just south of the tundra in North America. There is also a timber belt south of the tundra in Asia. Can you find what the great forest in Asia is called?
5. Water power is often used to make electricity, a very useful servant for man. List as many uses of electricity as you can.
6. Explain what Cabot meant when he said, The fish "sumtymes stayed" his "shippes."
7. Write a story about the French explorers in Canada and the way the country became part of the British Empire.
8. Can you tell how the rapids in the stream near Montreal have helped to make Montreal the largest city in Canada?
9. Look for a news item about Canada to add to your scrapbook.

A Short Quiz

Here, in Column I, are some incomplete sentences about Canada. Choose the correct ending for each sentence from Column II. Copy the complete statement.

Column I

1. Canada and Labrador are larger than____
2. Canada's many streams provide____
3. The world's greatest nickel mines are on____
4. Paper making is an important Canadian industry because of____
5. The people speak French in Quebec and in____

Column II

a. ____ fishing grounds and water power.
b. ____ the millions of trees good for pulp.
c. ____ the United States and Alaska.
d. ____ the lower St. Lawrence Valley.
e. ____ the Laurentian Plateau.

Philip Gendreau

A small boy watches the sailboats in a harbor of Cape Breton Island.

Chapter 4

The Maritime Provinces of Canada

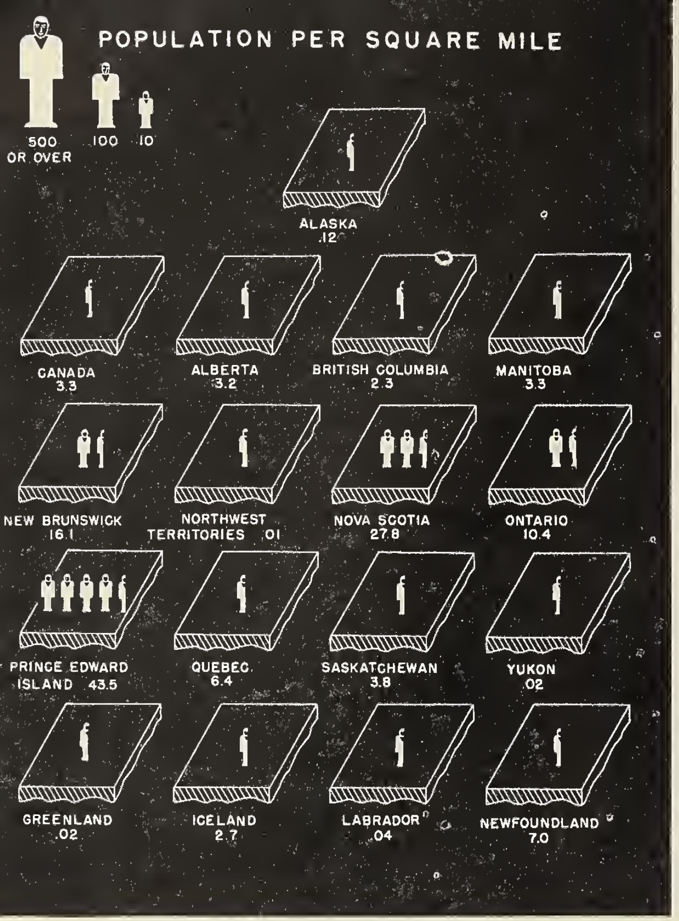
Canadian states are called provinces. The map of Canada will show you that the Dominion is divided into twelve parts. In the far north are four big pieces of land called territories. These four are Yukon, Mackenzie, Keewatin, and Franklin. The last three are called Northwest Territories.

The other nine parts of Canada are called provinces in somewhat the same way that the United States has forty-eight parts called states.

1. Use a political map to locate the nine provinces of Canada. Begin at the Atlantic border and name each province in order, westward to the Pacific. Which province do you think is largest? Smallest?

The Maritime Provinces. Three provinces, Nova Scotia, Prince Edward Island, and New Brunswick, are called the Maritime Provinces. Maritime means bordering on the sea. These three provinces together are about the size of the State of Alabama, but they have less than half as many people as Alabama. About one Canadian in every ten lives in the Maritime Provinces.

Nova Scotia. The Sunrise Province of Canada and doorstep to the Dominion



Population per square mile is a way to understand if a country has few or many persons in it. Each block represents one square mile of the country, and the little men show how many persons live in each square mile. Write a paragraph about the population of the Northland countries.

is Nova Scotia. It has the sea on all sides except a strip of lowland, not over 15 miles wide, which binds Nova Scotia to New Brunswick. This small province is an isthmus, a peninsula, and an island—Cape Breton Island.

The name Nova Scotia means New Scotland. Many of the people now living there are children or grandchildren of Scots who left the "Old Country" to make homes in the new country. In one place in Nova Scotia there are three hundred voters. Two hundred of them have the Scotch name of MacDonald.

Some Nova Scotians are not Scotch. Their great-grandparents were British and lived in the American colonies before the Revolutionary War. They did not want the colonies to break away from Mother Country England to form a new country. So they left everything they had in the United States of America and went to start a new life in the Maritime Provinces.

1. List the names of the three Maritime Provinces. Check each to be sure the spelling is correct and the writing legible.
2. Use the appendix to compare the area and population of Nova Scotia with the area and population of your state.
3. Are there any pupils in your class with Scotch names? Swedish? German? Do you know of any places that have Scotch or other European names, such as Loch Lomond on Cape Breton Island?

World champion tides. As you cross from New Brunswick into Nova Scotia, the Bay of Fundy lies on your right.

Every twelve hours the water of the sea rises several feet, more or less. This is called high tide. Then the water goes down again. This is low tide. If you look at the Bay of Fundy on a map, it looks somewhat like a funnel with the wide end toward the sea. As the tide rises, it pushes the water into this funnel-bay. The water at high tide rises so high that big ocean ships float quietly in their docks. Then the tide falls, the water runs out of the bay, and the ships stand on the bottom. In some places the tides rise 40 to 50 feet. Sometimes Nova Scotia boys go swimming and use the muddy banks for sliding boards. They slither down and plunge into the waters of the bay.

Two million barrels of apples. Near the shore on the Nova Scotia side of the Bay of Fundy is the Annapolis Valley. This small valley shows the value of a piece of really good land. Most of Nova Scotia is rather hilly and rocky. But the soil of

Dept. of Immigration, Ottawa

How does the Bay of Fundy help the fruit industry in Nova Scotia's Annapolis Valley?

the Annapolis Valley is soft and rich. The soil suits fruit trees. The weather suits the trees, too. When the north winds or the west winds blow across the Bay of Fundy in the autumn, they are warmed by the warm waters of the bay. This keeps away the early frosts. Then, quite the other way, the waters on each side of the peninsula are cool in the spring. This cools the south winds and keeps the apple trees from coming out in bloom until the last spring frosts have gone. Frost at bloom time often ruins a fruit crop. The people of the Annapolis Valley claim that they have a greater number of apple orchards than you may find on an area of like size anywhere else in the world. Some years Nova Scotia sells two million barrels of apples, chiefly to the Mother Country, England. Apples are Nova Scotia's chief export.

1. What do you understand by import and export?
2. Explain how water helps the fruit crop.

Newsprint by the mile. Nova Scotia is so hilly and rough that it is mostly a land of trees, but not all are fruit trees. About three-fourths of the province is covered with spruce, hemlock, and other trees used for lumber and pulpwood. In winter thousands of Nova Scotians have a job cutting trees into four-foot lengths and piling this pulpwood along the frozen streams. In spring when the ice melts, the logs float down the streams to pulp mills. At the mill the logs are ground and mixed with water. This mixture, which looks like very thin, cooked oatmeal, runs through long machines and comes out a roll of paper at the other end. Newspapers are printed on this paper. One Nova Scotian mill makes enough paper in ten hours or less to cover a square mile.

1. How many square feet of paper would it take to cover a square mile?

Steel is first. Steel and products made from steel in Nova Scotia sell for more money than does the newsprint. This is because Cape Breton Island has mines of good coal and quarries of limestone close together and near the coast. Indeed, at Sydney, Cape Breton, a coal mine is worked three miles out under the sea, and the seam or layer of coal is about seven feet thick. Good iron ore is mined nearby on the shore of Newfoundland. It is a short journey by boat to bring this iron ore across to Sydney where there is coal. Boat freights are the cheapest in the world.

1. Name the three important materials needed for making iron or steel.

Fish is second. Only one province, British Columbia, is ahead of Nova Scotia in fishing. Nearly every coast town in Nova Scotia has its fishermen who make their living on the Grand Banks or in the Bay of Fundy. One Nova Scotia company that prepares fish for market by salting, quick freezing, and in other ways, handles fifty million pounds of fish a year. And the town of Pictou, Nova Scotia, is said to be the largest lobster port on earth.

Halifax. Halifax, the capital and largest city of Nova Scotia, is nearer Europe than any other large Canadian port. In winter, when the cities along the St. Lawrence River are blocked in with ice, the harbor of Halifax is open, and ships carry away the apples, fish, coal, lumber, and other exports of Nova Scotia and also some produce from western Canada.

1. Locate on a map the capital of Nova Scotia. Find the population of the city.
2. Can you explain the terms, "port" and "harbor"?

Prince Edward Island. Every so often silver foxes have black pups with a few white hairs scattered through the black, and silver-tipped tails. This fur is considered very beautiful and is used for coats and fur pieces. Two Scotchmen who lived on Prince Edward Island caught some of these silver-black foxes and began to raise their young ones. This started the fox-farming business. Fur farms can now be found in every Canadian province, but Prince Edward Island started the business and is still a leader in the best quality of silver-black fox skins.

This smallest Canadian province is one of the best pieces of farm land to be found in eastern North America. "Garden of the Gulf" it is sometimes called. The rocks of most of eastern Canada and New England are very hard rocks. Those of the Annapolis Valley and of Prince Edward Island are softer and have turned into softer, deeper soil with fewer stones than is the case in most of eastern Canada. From an airplane it looks as if an artist had used his pencil to divide the land into fields for crops, pastures, and bits of forest. The farmers grow chiefly hay, oats, turnips, and beets for dairy cows, and potatoes to sell. The Prince Edward Islanders grow 60 to 70 bushels of potatoes each year for every person on the island. It might really be called "Great Potato Land."

Some Prince Edward Islanders raise and sell oysters. Oysters are strange fellows. They cannot travel much. They swim about for a week or so after they are born, and then attach themselves to almost anything under water—a rock, a sunken log, an old wreck of a boat, an oyster shell, even a bottle will do. There the oysters must spend the remainder of their lives without going anywhere else. They cannot move. They can eat only what the flowing water brings to them.

This habit of the oyster is very convenient for the oyster farmer. He dumps boatloads of oyster shells overboard into bays where the water is not too salty. The young oyster, swimming along, attaches itself to one of the shells. In from two to five years the oyster has grown big enough to go to market.

1. What is the population per square mile of Prince Edward Island? What does this tell about the land and climate?

New Brunswick and the St. John River. Part of the boundary between the State of Maine and the province of New

Brunswick is the St. John River. It flows into the Bay of Fundy at the city of St. John. This city, largest in New Brunswick, has an ice-free port used by ships the year round. Here the tide rises and falls 28 feet, twice each day.

At low tide the waters of the river foam and swirl as they fall over some rocks. Then the tide turns, and a wall of water, 3 to 6 feet in height, races upstream so fiercely that people stay away from it. The falls in the stream are reversed. The water runs upstream over the falls. The ocean wins the battle with the river only to lose it a few hours later at the next low tide.

Making a living. Potatoes bring more money to New Brunswick than any other crop. They are seed potatoes, and, like those of Prince Edward Island, are sold chiefly for planting, not for eating. These potatoes from New Brunswick and Prince Edward Island can be found growing on farms as far away as Argentina in South America. Seed potatoes from the north grow more quickly in the south than do crops from southern seed. Therefore, potato growers in the north have a regular business of sending seed potatoes to the south.

Farm crops come first in value, then wood pulp and lumber, as in Nova Scotia. Like Nova Scotia, the greater part of New Brunswick is covered with forest and has the same forest industries. New Brunswick people think that the griddle cakes they eat for breakfast are the best in the world. The cakes are made of their own buckwheat and are eaten with butter from the farms and maple syrup from their sugar maple trees.

Furs are also a valuable crop. Muskrat, mink, and fox are raised.

Other thousands of New Brunswick people "go down to the sea in ships."

The owner of a large silver-black fox farm on Prince Edward Island shows some of his fine pups to the cameraman. There were more than nine hundred fox farms on the island in 1940.

Ewing Galloway

They are fishermen for cod and halibut on the Grand Banks and for herring in the Bay of Fundy. As they fish they sing:

> The farmer has his rent to pay
> And seed to buy, I've heard him say,
> But we who plow the Atlantic Deep,
> Though never sowing, always reap
> The harvest that to all is free. . . .

New Brunswick is said to have the largest sardine cannery in the British Empire.

An interesting vacation. Many American tourists go to the Maritime Provinces for vacations. Some go to hunt deer in the forests or to fish in the forest streams. Plan to visit any of the Maritime Provinces of Canada some time. You will have an exciting vacation and will want to return again and again to this wonderland that was called Acadia.

1. Locate on a map the St. John River. Between what state and province does it flow?

Why is the growing of seed potatoes an important business in New Brunswick?

Canadian Pacific Railways

2. Which do you think brings higher prices—seed potatoes or potatoes for food? Why?

Something to Do

1. Make up five questions to ask your classmates about the Maritime Provinces. Be sure you know the answers to your questions.

2. Use your own words to write the meanings of the following:

a. bay
b. tide
c. maritime
d. isthmus
e. peninsula
f. island
g. province
h. territory
i. state
j. wood pulp

3. Iron and steel are usually made near coal mines. Explain why Sydney, on Cape Breton, is an important iron and steel center.

4. Give the reasons that make this statement true: Halifax and St. John handle more shipping in winter than in any other season.

5. Add to your scrapbook one or more pictures of the following:

a. A street scene in old Quebec
b. A tourist fishing in New Brunswick
c. A fox farm on Prince Edward Island
d. Apples in Nova Scotia, or potatoes in New Brunswick

6. List four kinds of work people do in Nova Scotia; three kinds of work people do on Prince Edward Island.

7. Prepare a talk on one of the following topics:

a. Oyster beds
b. Reversing falls
c. Paper making

8. What products do the Maritime Provinces have to sell? What do you think these provinces buy from other countries? Why is trade important to countries? Discuss.

A Short Quiz

Name and locate the following:

1. The province almost entirely surrounded by water
2. The "funnel-bay"
3. The apple-growing valley
4. Coal mines under the sea
5. Codfish and halibut
6. Silver-black fox skins
7. "Garden of the Gulf"
8. Seed potatoes—the money crop

Canadian Pacific Railways

An airview of Quebec shows the new—the upper—and the old—the lower—parts of this historic city.

Chapter 5

Quebec and Ontario

Twin giants. Quebec is the largest province of Canada; Ontario is next largest. The two together are as large as all of our states which we call North Central, plus New York, Pennsylvania, and New Jersey.

To say that these two provinces are that big is a kind of geographer's joke. It is a joke because most of the land in these provinces has so very few people, and some of it has no people at all and no prospect of having any.

In the north some of the land is tundra. South of the tundra is a very wide stretch of the Great Northern Forest—poor, scattered, little trees at the northern part, better trees at the south, with big stretches of treeless swamps called muskeg.

Much the greater part of these provinces is the Laurentian Upland. The surface is rough, rocky, and full of lakes. There are miles and miles and miles of forests, but very few farms.

The little corner of these two provinces that lies south of the line from the town of Sudbury, in Ontario, to the city of Quebec has nearly all the people of Ontario and Quebec. More than half the people of all Canada live there.

No wonder the businessmen who live there think of it as the "heartland of

Canada." They boast, "We have everything, or we can make it from what we have."

That boast is a little big—most boasts are—but Nature has been kind to this little piece of the big Dominion. Why does it have so many people?

There are several reasons:

(a) In the area between Lakes Ontario, Huron, and Erie, and the rather narrow St. Lawrence Valley, is land that is good for the plow—for wheat, oats, potatoes, pasture, hay, fruit.

(b) This land also has a good climate for people as well as for crops.

1. Use the tables in the appendix to list the area and population of Quebec and Ontario.
2. What is the population per square mile of each province? Why are there so very few people in most parts of these provinces?
3. Where are Quebec and Ontario? Which is farther east; which is farther north? In what direction is Quebec from your home?
4. Here again, as in Alaska, we speak of a part of the country as being the "heartland." As you read about Quebec and Ontario, look for facts to prove that the part of these provinces that lies south of the line from Sudbury, Ontario, to the city of Quebec deserves to be called the "heartland" of Canada.

A "good climate." Several years ago a man named Huntington wrote a book about climate—the kind of weather a place has. He said that the best climate for most people most of the time has weather that changes from day to day and from season to season—cold during part of the year; warm, but not too hot, for the rest of the year; several clear days, then a cloudy day; and rain—enough rain for grass and most crops. He went on to say that such a climate makes people feel well, willing to work, or to play hard in games. We say such people are energetic.

This Canadian climate has cold and snowy winters. The lumbermen go to the forests to cut down trees. Many people from cities in the United States go there in the winter for skiing, coasting, and skating.

In summer, a day of 90° has the papers talking about a "hot spell." There is enough rain for almost any crop that will grow in that climate.

Cold, but little fear of frost. The part of heartland that lies between the three Great Lakes has many orchards of apples and peaches, vineyards of grapes, and

Coasting, skating, and skiing attract many winter tourists to Quebec and Ontario. Here a group of pupils learn some of the fine points of skiing. What kinds of winter sports do you have in your neighborhood? What kinds of winter sports do you suppose neighbors in South America have?

Philip Gendreau

plantations of berries. Why? The lakes help the fruit industry. The ice-covered lakes make the south wind cool in the spring. This causes fruit buds to bloom late and miss the frost. By September and October the lakes are warm. The warm water keeps the frost away, and there is time for the peaches, grapes, and berries to ripen. For these reasons there is a great fruit industry here, as there is in Nova Scotia.

1. Explain in your own words why there is a great fruit industry between the lakes.

Dairy land. East of Lake Ontario there is not much fruit, but there are good pastures, fields of oats, hay, and potatoes, herds of cows, and dairy farms. This part of heartland is also dairyland. Ontario leads all Canada in dairy production—milk, butter, and cheese. Quebec is second. Ontario makes about three out of every four pounds of Canadian cheese. The cheese is good, because the Dominion Government has men whose job is to see that only the best quality of butter and cheese is allowed to be sent from Canada to other countries.

Manufacturing. Heartland does two-thirds of the manufacturing that is done in Canada. Why? Every factory must have: (1) workers, (2) power to run its machines, (3) raw materials, and (4) a chance to send things to market.

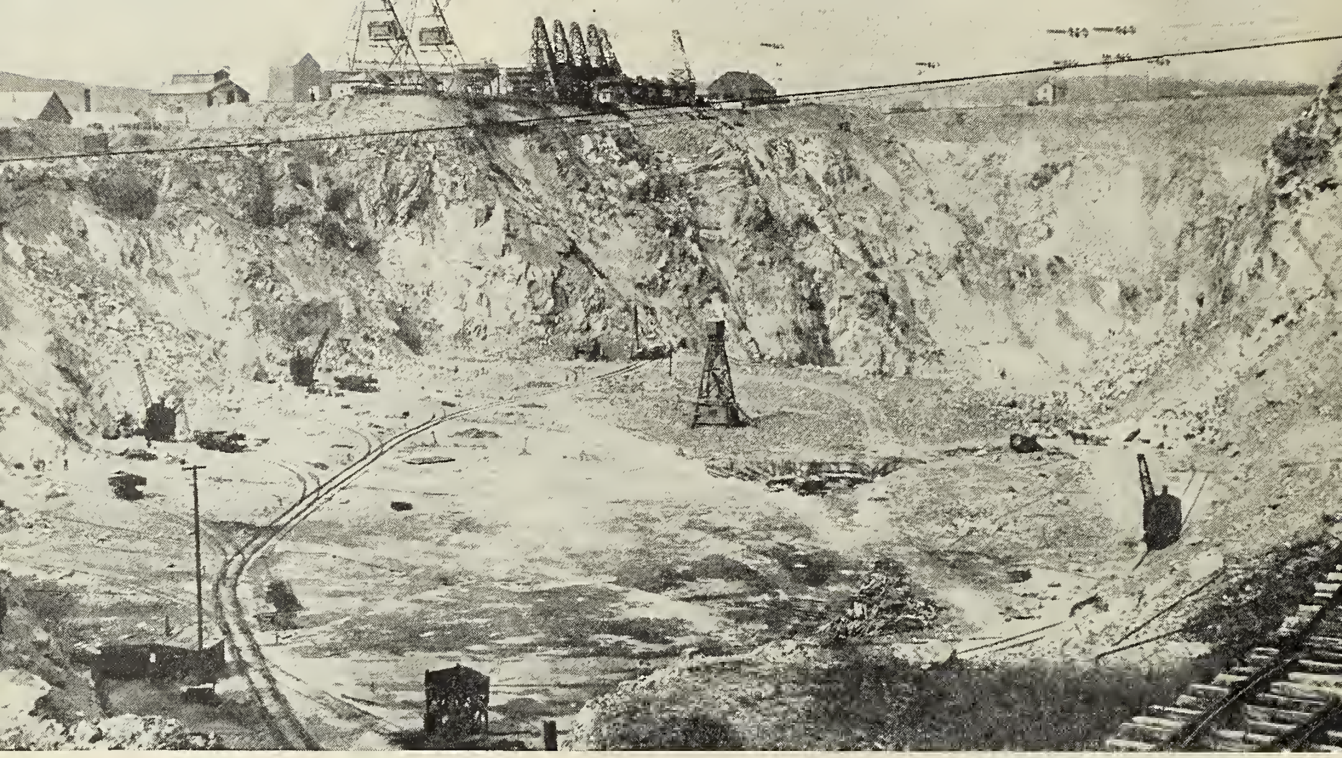
Workers. The Canadians are thrifty people and good workers. The good climate of Canada makes the people want to work. Work they must to get ready for the cold winter. The well-tilled farms give them food.

Cheap power and light. Almost every family in the heartland of Canada lives in a house lighted by electricity. Some of the houses are also heated by electric current. There are stoves that cook by electricity, and radios, washing machines, and other household appliances are run by electricity. The father of the family may go to business in an electric street car and work at a machine driven by electricity. Nearly all of this power is made from the force of falling water.

Canada has splendid water power. The thousands of lakes on the Laurentian Plateau are about 1500 feet above the sea, and the streams of water come tumbling down from the plateau with many rapids and waterfalls. Power plants have been built along these streams and beside the great waterfalls of Niagara. Heartland is threaded with electric wire, and the current is cheap. Nature says to Canada, "Here is power. Come and get it. Come and use it."

Raw materials. The strawberries on your dinner table are raw materials. They were not made by the hand of man or by his machines. The berries may have grown in your garden, or someone in your family may have bought them at your neighborhood food store. But someone makes a strawberry shortcake; that is a manufactured product. Perhaps your mother made it. You might say she manufactured a shortcake.

Ontario and Quebec have important raw materials for their people to use. We must not forget the great belt of forest land that extends across Quebec and Ontario from the Gulf of St. Lawrence near Newfoundland to the western boundary of Ontario and beyond to the Rocky Mountains. Here are millions of trees. Their wood is raw material. Pulp mills and sawmills along the St. Lawrence and other rivers give to the provinces of Quebec and Ontario a plentiful home supply of raw material and also a great export.



Canadian Pacific Railways

About sixty per cent of the world's total production of asbestos is mined in Quebec. Asbestos is a very interesting and useful material. You may want to read more about the manufacture and use of this product. This is a picture of an asbestos mine in Quebec Province.

Near Sudbury, Ontario, is the world's largest nickel mine. Along the railway northward toward James Bay are gold mines. In western Quebec, on a branch of the same railroad, are copper mines.

At the wide mouth of the St. Lawrence River is a tongue of land, the Gaspé Peninsula, part of Quebec Province. Here are mines that yield nine out of every ten pounds of asbestos that is used in the world.

Iron and steel are made very cheaply on the shores of the Great Lakes. Southern Canada has a good supply of this most important material—iron ore. Minerals from Ontario and Quebec are used in the Canadian factories that make automobiles and many other kinds of machinery.

We have told you only a small part of the mineral story of Quebec and Ontario. These provinces lead all Canada in value of minerals. And any day you may read of a new find here richer than any now known.

In many parts of these tree-covered highlands are other kinds of raw materials. They are the otter, mink, fox, weasel, muskrat, and skunk, moose, caribou, deer, bear, and lynx. These raw materials go to the fur factories and to the taxidermists. Taxidermist is only a big word for people who prepare the skins for mounting to make them look like living animals or birds.

In the streams that go down from the highland country to the sea, herring and salmon are caught for canning, quick freezing, and salting.

1. What are the four sources of wealth in these provinces? From these facts, what do you think are the main occupations?

2. Use a map to follow the railway northward toward James Bay and toward the copper mines in western Quebec.

3. Point to the Gaspé Peninsula on a globe or map. For what product is this tongue of land well known?

Going to market. The waterway from Lake Superior to the sea is a great aid to the Canadian heartland. Two canals at Sault Ste. Marie, called Soo, let ships pass around the rapids and go from Lake Superior to Lake Huron and on to Lake Erie. The Welland Canal, near the east end of Lake Erie, lets ships pass from Lake Erie to Lake Ontario, which is 326 feet below Lake Erie.

At the twin cities of Port Arthur and Fort William, Ontario, there are large elevators for holding wheat and oats. The elevators have spouts so big that a hundred thousand bushels of grain can be poured into a ship in one hour.

So many ships carry wheat, iron ore, lumber, and coal from lake to lake that the ships passing through the Soo Canals are five times as many as those passing through the Panama Canal.

The lake boats end their run at Montreal, the largest city in Canada. Montreal is 1,000 miles from the sea, but oceangoing ships can be seen loading and unloading at the city docks. These ships carry more grain from Montreal than is exported from any other city in North America.

The low freight rates on the lake boats bring raw materials cheaply to the Canadian factories, and help take products cheaply to market. Most of the manufacturing of Canada is done on or near this great waterway. Montreal and Toronto, the two chief cities of Canada, are both on this waterway. So are Quebec and Hamilton, Ontario. Ottawa, the national capital, is the only city of over a hundred thousand people in these two provinces that is not on the Great Lakes-St. Lawrence Waterway. This waterway is especially busy in summer. In winter the boats are frozen fast for about five months.

Philip Gendreau

Montreal, Canada's largest city, has a population of more than 900,000.

As we ride by taxi to our hotel in Montreal, we stop at a railroad crossing. By the tracks is a sign—bold letters at the top: "RAILROAD CROSSING," bold letters at the bottom: "TRAVERSE du CHEMIN de FER." We have come to the land of the French Canadians. Signs are in English and French.

In this city of about a million persons, more than half speak French. They are the grandchildren or great grandchildren of French people.

Because Ottawa is the national capital, it is the home of many government workers.

The Parliament at Ottawa makes the laws for Canada, as the Senate and House of Representatives at Washington do for us. If you go to Ottawa, you will hear the 53 bells in the Peace Tower of the Parliament Building playing the beautiful national hymn of the British family of nations—"God Save the King."

About 170 miles down the river from Montreal is the beautiful old city of Quebec with its fort, or citadel, standing high above the river's waters. Many American tourists visit Quebec. For many years sportsmen from cities in the United States and Canada have gone to the Laurentian Highlands to fish in the streams, and to hunt big game in the forests. Now there are more tourists, those who ride in automobiles through wonderful forests, past beautiful lakes and neat farms. Other visitors are the young people who like winter sports—skiing, skating, ice boating, tobogganing.

1. Use a map to trace the St. Lawrence River to Montreal and to Lake Ontario. Can you see how the St. Lawrence helps to make an inland waterway, 2,300 miles long, from the middle of North America to the Atlantic Ocean?
2. Locate the Sault Ste. Marie Canal. Name four products that pass through the canal in great quantities.
3. Since boats are frozen fast during the winter months, how do you think the factories are supplied with raw materials during this period?

Something to Do

1. You will want to add these four words to your vocabulary: muskeg, heartland, asbestos, taxidermist.
2. Explain why most of the people of Canada live in the southeast corner of the province of Ontario and nearby in Quebec.
3. Describe the kind of climate that makes people feel energetic.
4. List the four items necessary for manufacturing. Be ready to tell how parts of Quebec and Ontario provide the four necessary items.
5. How many uses of asbestos can you name? Use an encyclopedia or some other reference to help you with your list.
6. Discuss with your classmates the reasons for Montreal being a great seaport and manufacturing center.
7. Think about the answers to these questions:
   a. What does the location of the farming area in Ontario tell you about the growing season?
   b. Of what value is the Laurentian Upland to the people in the Quebec and Ontario provinces?
8. Tell why Quebec is an interesting city to visit.
9. Make a list of useful minerals found in Ontario. In what other ways has Mother Nature been kind to this province?
10. Write one important fact to remember about each of the following cities in the provinces of Quebec and Ontario:
    a. Montreal
    b. Quebec
    c. Ottawa
    d. Hamilton
    e. Sudbury
    f. Niagara Falls
    g. Toronto
11. Learn to spell the names of the two provinces and of the seven cities listed in the exercise you just completed. Be ready to write them from memory as your teacher dictates them to you.

A Short Quiz

Write the numbers of the sentences that are true:

1. Montreal is the largest city in Canada.
2. Ottawa is the capital of Ontario.
3. Most of the asbestos used in the world is mined on the Gaspé Peninsula.
4. More than 500,000 French people live in Montreal.
5. Quebec makes large quantities of pulp for paper because of the large forests throughout this province.
6. There is much good farm land in northern Quebec.
7. Canada has much water power for making electricity.
8. The "industrial heart" of Canada is in the provinces of Quebec and Ontario.
9. Very little fruit can be grown because of the early fall frosts.
10. Electric current for the homes is very expensive and is little used.

Ewing Galloway

Broad expanses of wheat fields are a usual sight in Canada's Prairie Provinces. Here we see the harvest in an Alberta wheat field and oil derricks in the background—food and fuel.

Chapter 6

Prairie Provinces

The Prairie Provinces. Suppose you were to follow the Saskatchewan River from its source in the Canadian Rockies to Lake Winnipeg, then follow along the lake and the Red River to the United States line. Now if you were to travel over the land between these rivers, the United States boundary, and the Rocky Mountains, you would find most of it is level or gently rolling grassland. There are few trees except along the streams. Here the buffalo roamed and ate grass. Here the plains Indian got his living by hunting the buffalo. It was a fairly easy living, too; for the Indian could see long distances over the flat, almost treeless country, and was able to spot any moving object.

Any large piece of fairly level land with grass but no trees, except here and there near streams and lakes, is called prairie. So the three Canadian provinces, Manitoba, Saskatchewan, and Alberta, which extend westward from Ontario, came to be called the Prairie Provinces.

1. Locate the Prairie Provinces on a physical-political map. In these provinces are parts

of three belts—tundra, forest, and plain or prairie land. Can you locate each of these parts in the Prairie Provinces? Does the Laurentian Uplands extend into these provinces?

2. Use the appendix tables to find:
   a. Wheat production in Canada and in the United States.
   b. Size and population of Canada and of the United States.

3. How many persons per square mile are there in each of the two countries? in each of the Prairie Provinces? Think about the reasons for some lands being densely populated while others have few people in them.

Wheat comes to the prairie. Botanists are people who know much about plants and plant life. Botanists tell us that grain crops, such as wheat, oats, rye, and barley, are just grasses that man cultivated. That is, man plowed the ground, planted the seed, and took care of the growing plants.

When white people came to live in the Prairie Provinces they said, "If this land will grow wild grass, it will grow tame grass. We will plant wheat. We will plant the seed in the spring and let the wheat ripen in the long, sunny days of the short, warm summer." And they did. Now they grow so much wheat that in some years Canada grows more than half as much wheat as the United States grows. Saskatchewan usually leads all Canadian provinces in bushels of wheat harvested. Alberta is second, Manitoba is third.

Of course the few people, only about 12 million, who live in the big dominion cannot eat one-fourth of the wheat they grow. They sell it chiefly to the people who live in the motherland, Great Britain, and to people on the continent of Europe.

The Prairie Provinces load grain on freight cars and pour it through the funnel cities of Port Arthur and Fort William into lake steamers. Then away go the boats down the long Great Lakes. Some unload the grain into canal barges at Buffalo to go on to New York City. Some go on down the St. Lawrence River to meet the big oceangoing ships lying in the docks at Montreal. There is so much ice in Hudson Bay that the railroad to Churchill carries but little export wheat.

1. Why are Port Arthur and Fort William called "funnel cities"?

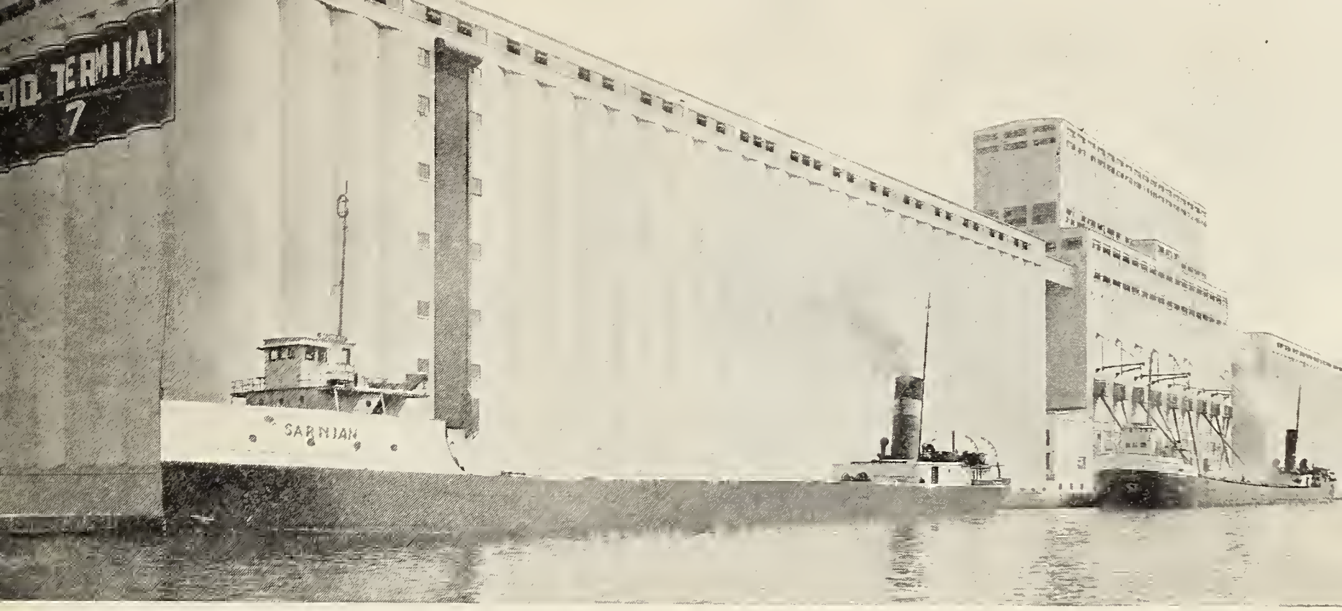
2. How is the grain sent to markets when the Great Lakes are frozen?

Mixed farming on the prairie. Some years the weather in some parts of the Prairie Provinces does not suit wheat. Rain comes at the wrong time, or there is too little, or too much rain comes, or a frost comes at the wrong time. Then the wheat crop is poor. That makes the wheat farmer poor, very poor.

"We will stop being one-crop farmers," said they. "We will keep on growing wheat; but we will also grow oats or barley or rye. We will grow alfalfa, and clover, and make hay that cattle like to eat. We will have gardens, then we will not have to buy so much food. We will have cows for milk, bees for honey. We will have pigs, chickens, and maybe a flock of sheep." And they did. On many farms wheat farming became mixed farming. Then there was more money in the farmer's pocket. Many farmers in the Prairie Provinces have herds of cows and sell milk to creameries where butter is made; others sell fat hogs.

1. What do the terms "mixed farming" and "one-crop farming" mean to you?

Southern Alberta. In some parts of southern Alberta the rainfall is not



Sask. Co-op. Prod. Ltd.

The open prairie country of Saskatchewan is excellent for the use of large machines in growing spring wheat. Rows of elevators in the "funnel cities" store the grain until steamers take it to market.

enough for most crops, but it is enough for grass. So herds of cattle graze there. These animals are thick and chunky. They are raised chiefly for meat and are called beef cattle.

This dry part of Alberta is within sight of the snow fields and glaciers of the Canadian Rockies. Small rivers are fed by melted snow and then flow away to join the Saskatchewan. Men build dams in the small rivers and lead the water through ditches to the fields to water the crops. This is called irrigation. It has helped Alberta to be first among Canadian provinces in the growing of sugar beets and second in alfalfa.

The largest city of the irrigated lands is Calgary. It is sometimes called the "Capital of Cowland." Calgary has a Wild West Show and cattle fair in July of each year. If you want to learn how to ride a wild steer or a bucking horse, or if you want to milk a wild cow, visit the Calgary Wild West Show. You are sure to have an exciting time. In Calgary there are also beet sugar mills and stockyards.

The Peace River Country. The Peace River is in northwestern Alberta. The climate and the soil here are much better than in the land directly east of it. The Peace River Valley is fertile farm land. It is the most northerly part of the land of farms. Here long hours of daylight, as much as 18 hours, ripen big crops of vegetables and of grain in the short, hot summers.

1. Locate on a map the Peace River. Into what lake does it flow?
2. What are the reasons big crops of vegetables and grain can be grown in the short summers so far north as the Peace River Valley?

Capitals of the Prairie Provinces. Winnipeg, capital of Manitoba, is the metropolis of the Prairie Provinces. A metropolis is the most important city of a country or part of a country. Winnipeg is said to have the largest stockyards in the British family of countries, and the largest railway shops and yards in the world owned by one railroad. Winnipeg is sometimes called the "Chicago of

Canada," because it is the railway hub of the Dominion.

Regina, capital of Saskatchewan, is the "Home of the Mounties." Here men are trained for that well-known and very able force, the Royal Canadian Mounted Police.

Edmonton, the capital of Alberta, is perched on a bluff, high above the North Saskatchewan River. There are large stockyards, meat-packing plants, grain elevators, cereal mills, and creameries in this city.

These Canadian cities and others are on the airways of northbound planes that go "up and over" to Europe, to Asia, and to Australia.

1. Why do you think Winnipeg is called the hub of the Dominion of Canada?
2. Use the airways map to trace the flights connecting the Canadian cities.
3. Use a physical map to tell whether the Prairie Provinces are mostly prairie or forest.

The Laurentian Country. Most of the northern and northeastern parts of the three Prairie Provinces are covered with forest, and much of the forest is on a part of the Laurentian Plateau which we read about in Chapter 5. You remember the resources of this land—wood, water power, minerals, furs.

You know that trappers go into the Great North Woods, set their traps, bait them, collect the fur-bearing animals that are caught in the traps, skin the animals, and sell the skins. But let the figures talk. In one year trappers in Manitoba caught and sold:

581,862	muskrat skins
228,803	squirrel skins
155,567	weasel skins
42,235	skunk skins
30,999	fox skins
21,067	mink skins
13,248	beaver skins
7,745	wolf skins

We omitted from the list all animals caught below five thousand. So you see the two thousand or more fur farms in the Prairie Provinces do not get all the fur business. Men still make a living by hunting and trapping.

Mineral land and farm land. Two rivers flow through Alberta to Lake Athabaska. The river to the east is also named Athabaska. In its valley is more salt than all the people in North America will use for we know not how many years. There is sand also—thousands of square miles of sand. And each grain of sand has a coating of tar and of oil—billions of barrels of tar and oil waiting for men to come and get it from the oil sands. These are but a small part of the mineral wealth of the Prairie Provinces.

Oil and coal. "But," say the people of Calgary, "what about our oil and

Sugar refining is one of Manitoba's newest industries. Here the beets are piled in the storage yard to await processing in the plant.

Dept. of Mines and Natural Resources, Winnipeg

coal?" Westward from the city, as the land rises to the foothills of the Rockies, lies the second richest oil field in the British family of countries. The most important field is in Trinidad. Alberta produces about ten million barrels of oil a year, with more—much more—in reserve in the ground. A reserve is something you save for later use.

And the coal reserves in Alberta! They contain thousands of millions of tons. How many billions is anybody's guess. Of course this coal is not good Pennsylvania anthracite. It is soft, bituminous coal and not very good soft coal either for making a fire in your kitchen stove. But we must think of coal as something useful for more than heating a house, for cooking, or for making steam to run an engine. There are many other ways of burning coal and of using it for other purposes.

1. Locate the oil and coal fields in Alberta. Point out the foothills of the Rockies. Which color shows the mountains on your map?

The chemist and coal. Chemists like coal. They call it "black gold." A chemist studies the make-up of substances and learns much about the simple materials, called elements, out of which the earth and everything in it is made. Iron is an element. Tin, copper, and gold are also elements. There are more than 90 other elements. Everything you see about you, including your body, is an element or is made up of two or more elements.

From coal, air, water, salt, and some ordinary wood, all of which the Prairie Provinces have in great plenty, the chemists get the elements called carbon, chlorine, hydrogen, oxygen, and nitrogen. These are the "big five" among the elements of the earth—more plentiful than all the others combined.

Ewing Galloway

Much rigging and machinery are needed to take petroleum from the earth. Alberta provides nine-tenths of the oil output of Canada.

From these elements the chemist makes dozens of medicines for your pains; saccharine to use in place of sugar; dyes for your dresses or shirts; nylon for stockings; rayon for parachutes; rubber, alcohol, antifreeze for radiators of automobiles, and hundreds of other useful things. These products are called synthetics—anything made by combining two or more elements. Some synthetics are plastics—anything that can be easily molded or shaped. The nose of an airplane is sometimes built of one of several kinds of transparent plastics.

The great mineral resources of the Prairie Provinces are not being used very much yet. There are not enough people in the Prairie Provinces to do so much work.

1. You may want to read more about the work of chemists who combine elements to make synthetics.
2. Can you name something that is synthetic? Something made from plastic?

Something to Do

1. Write a paragraph about the different kinds of land in the Prairie Provinces.

2. Write the names of the three Prairie Provinces, the capital cities, and an interesting fact to remember about each capital.

3. Learn to spell the names of the provinces and their capitals.

4. Name the river that flows through the Prairie Provinces. Tell in what mountains the river rises and into what lake it flows.

5. Discuss with your classmates this statement: "The summer days have long hours of sunshine in the high latitudes; therefore even though the growing season is short, vegetables and grains can be grown."

6. The people in Canada export more than three-fourths of the wheat they grow. What kinds of goods do you think the people of the Prairie Provinces import?

7. Prepare a talk on either "Mixed Farming" or on "One-crop Farming." Be sure you tell the advantages and disadvantages of the method of farming you choose.

8. Collect pictures for your scrapbook of fur-bearing animals, grain elevators, and Canadian Mounted Police.

9. Check your understanding of the list of words below by placing them in the blanks in the sentences following them.

metropolis
"black gold"
cultivated
prairie
tundra
bituminous

a. Land that is worked and produces crops is said to be ____.
b. Fertile, level, or slightly rolling land without trees is called ____.
c. Marshy, flat land with cold climate and little vegetation is called ____.
d. A ____ is the most important city of a country or part of a country.

Philip Gendreau

e. Chemists call coal ____.
f. Another name for soft coal is ____.

10. Give short answers to name or identify the following:

a. Two important crops of the irrigated area in Alberta
b. "Capital of Cowland"
c. The chief grain crop of the Prairie Provinces
d. The metropolis of the Prairie Provinces
e. The four resources of the Laurentian Upland
f. Four mineral resources in the Prairie Provinces

11. Add your own definition of the following words to your list of geographical terms:

prairie
metropolis
bituminous
anthracite

12. Review your understanding of the term "irrigation." Do you know how to use these words correctly?

botanist
beef cattle
resource
reserve
synthetics
plastics

A Short Quiz

Suppose we were to divide the Prairie Provinces along the Saskatchewan River and think of the areas as "north of the Saskatchewan" and "south of the Saskatchewan." Here are nine statements about the whole of the Prairie Provinces. Read the statements carefully, then write the heading "North of the Saskatchewan" and under it the statements that are true about this area. Do the same for the southern area.

1. This part of Canada is one of the world's greatest wheat-producing regions.

2. This region produces many cattle, sheep, and much butter and cheese.

3. Indians hunt and trap fur-bearing animals in the Great North Woods.

4. Irrigated fields produce sugar beets.

5. The fertile farm land of the Peace River Valley produces crops of vegetables and grain.

6. Large stockyards and railway shops are located in this part of Canada.

7. Much wood and many furs are taken from this part of the Prairie Provinces.

8. There is salt enough in the Athabaska Valley to provide all the people of North America with salt for years and years.

9. Successful lumbering depends upon flowing rivers.

Any high land that sends water in two directions is called a divide. In North America, the divide that parts waters flowing to the Pacific from waters flowing to the Atlantic is called the Great Divide.

Chapter 7

British Columbia, Yukon, and the Northwest Territories

A "Sea of Mountains." "We will not pay good money to build a railroad to British Columbia. It is nothing but a 'sea of mountains.' " That is what the people of eastern Canada said when the people of the Prairie Provinces began to talk about a railroad westward to the Pacific Coast.

Finally the railroad was built. But it went, not from Montreal, but from Halifax to Vancouver on the Pacific coast. Then the British colony of British Columbia grew in population and became a province in the Dominion.

Later a second railway was laid across Canada from Quebec to the Pacific coast at Prince Rupert, British Columbia.

The first train reached Vancouver in 1885. At that time the people in eastern Canada knew very little about far-off British Columbia. They would have admitted what the surveyors said, that the province of British Columbia was larger than the states of California, Oregon, and Washington. But they never would have believed that British Columbia would stand first among the provinces in the production of lumber and fish, second in vegetables and fruits, third in manufacturing, and fourth in number of people.

One way to tell about British Columbia is to say that it looks as though a huge giant had squeezed it in his mighty fist. Another way is to say, "Mountains, mountains, mountains, long ranges of high mountains, and long, narrow valleys between the ranges."

This mountainous land was made even more rough when great glaciers rode over the whole of it. As the glaciers went down into the sea, they gouged deep valleys. When the glaciers were gone the sea filled these long, deep, narrow valleys. Such long narrow arms of the sea are called fiords. The steep sides of the fiord coast are beautiful, but they do not offer much land that people can use. The town of Prince Rupert has less than seven thousand persons, but they have a difficult time in finding room for the houses and for the wharves and railroad yards that the town needs.

There are many islands along this shore—small islands, large islands, thousands of islands. Between the islands and the shore the water is not so rough as in the open sea. Many ships go up and down this waterway because it is safer than going on the ocean.

1. Study carefully a physical map of British Columbia. Notice the mountains and valleys, the many islands along the shore. What helped make this mountain country so very rough?
2. Trace the Saskatchewan River from the Rocky Mountains to its mouth. Toward what large ocean does this river flow? Now trace the Fraser River. Into what ocean does it flow? Read the following paragraphs to help you understand the divide or water parting.

The Great Divide. The land between the sources of the Saskatchewan and Fraser rivers is a high mountain range. Streams flow down one side of this mountain range and go to the Pacific Ocean. The streams that flow down the other side of this mountain range go to the Atlantic Ocean.

Any such high land which sends water in two directions is called a water parting or divide. This divide in North America that parts waters flowing to the Atlantic from waters flowing to the Pacific is called the Great Divide.

British Columbia weather. Do you run your lawn mower during Christmas vacation where you live? The people of Vancouver, Victoria, and other places along the southern coast of British Columbia cut their grass all through the winter. On even the coldest days the thermometer rarely goes below 36°. If it should by chance drop to 32°, freezing, all the newspapers would talk about the "cold snap." Weather of 80° in summer would be called hot, and the newspapers would talk about the "hot spell."

Winds cause this climate to be mild and even. Winds blow from the Pacific most of the time, and have a cooling effect in summer and a warming effect in winter.

There is much rainy weather all the year along this part of the Pacific coast. This is the way it happens. Air evaporates the sea water, which means that water turns into vapor and goes into the air. Winds from the sea carry the moist sea air over the land along this shore. That is why there is rain every month and many rainy days. We say that such places have an oceanic climate. Another word for it is marine climate. The grass is very green and the trees grow to great size in this part of British Columbia.

As the west wind pushes moist air up the western slopes of the mountains, the air is cooled. The cooling causes the air to drop its moisture, and some of the mountainsides get 80 inches of rain in a year, more than twice as much rain as Victoria gets with its 30 inches. As the winds blow down the east slopes of the mountains, they are warmed and give less rain, as little as 8 inches in some British Columbia valleys. These places are almost deserts. The people who live there call them deserts. People can farm this land only by irrigation.

Northward along the coast from Vancouver, the same even temperatures continue, but the weather gets cooler, and there is more rain. Inland behind the mountain ranges the differences in temperature between summer and winter are much greater. The thermometer drops below freezing—much below—and rises at times to 90° without making people feel that they must talk about the weather.

1. Can you give the reasons for the large trees on the western slopes of the mountains? For what industry do these trees provide the raw material?
2. Study the temperature and rainfall graphs of this region. Which areas have less than 8 inches of rainfall?

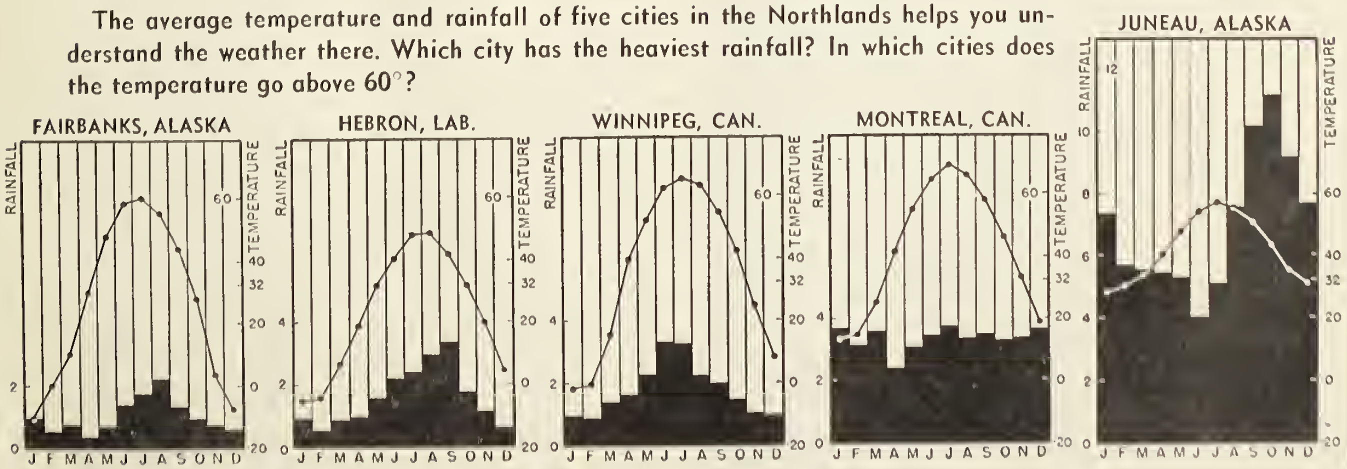
Logging and lumber. By logging we mean cutting down trees, sawing the trunks into logs, and bringing out the logs to the sawmills and pulp mills. By lumbering we mean sawing the logs into boards, beams, and other pieces of wood ready for use. The heavy rain on the western slopes of the mountains of British Columbia gives this province more forests of soft woods than can be found in any other part of the British family of nations. Most of these trees are conifers. That is, they bear cones and have needlelike leaves. Most of the conifers are evergreens—green all the year.

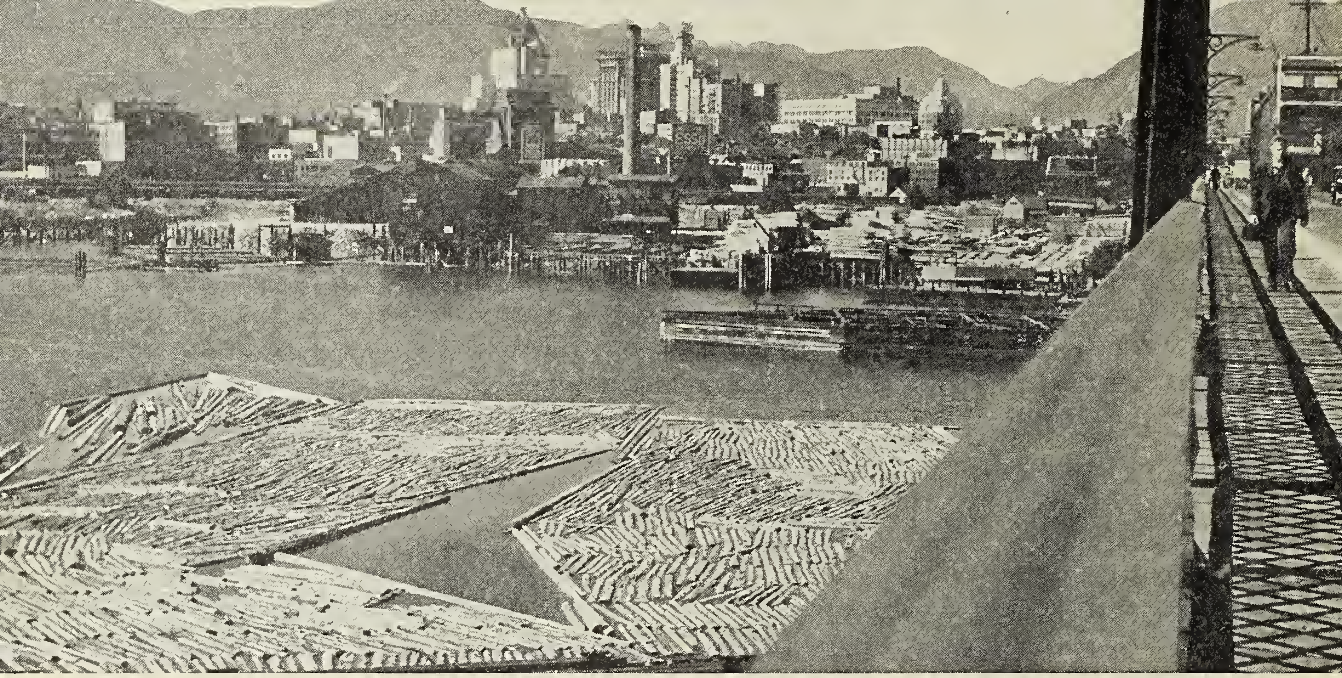
Here we find the Douglas fir, one of the best woods for lumber. We find the red cedar, which gives wood that is very light and very, very slow to decay; and the Sitka spruce, good for many purposes, but so light and strong that the wood is used for ladders and airplanes. Trees 200 feet high and 6 feet through the trunk are quite plentiful. These trees are 400 years old. Trees 20 inches through are about 80 years old.

1. Can you see a reason for conservation of forests in the fact that it takes about 80 years for a tree to grow to 20 inches through the trunk?

Mining ranks second. Gold brought the first rush of people to British Columbia. Gold was in the sands of the Fraser

The average temperature and rainfall of five cities in the Northlands helps you understand the weather there. Which city has the heaviest rainfall? In which cities does the temperature go above 60°?





Black Star

Logs on the Fraser River at Vancouver tell of one of this city's many industries. Other industries of this area are those connected with fishing, sugar refining, and shipbuilding.

River. This gold could be gathered by simply washing the sand in a pan of water. Since 1858, when gold was first found, many other useful minerals also have been found in British Columbia. Copper and zinc are mined along the railroad that ends at Prince Rupert; coal comes from Vancouver Island. One in every ten pounds of lead in the world comes from mines in the valley of the Columbia River just across the border from the United States. Minerals from British Columbia sell each year for enough money to give each person in the province as much as a hundred dollars.

Farming ranks third. In the Bible it says that the land of Canaan was "flowing with milk and honey." That was said because Canaan was good for crops and for farm animals and for people. This Bible saying has been applied also to the valley of the Fraser River, with its dairy farms, fields of grains, and patches of berries and other small fruits. Some years Vancouver claims to be the world's largest grain port—exporting the grain from the Prairie Provinces.

Inland from the coast, the valley lands are irrigated by water from mountain streams. These valleys grow fruit—apples, peaches, pears, plums, apricots, and cherries—and many kinds of vegetables. British Columbia leads all Canada in growing apples—about six million boxes of apples a year.

Fishing ranks fourth. There are thousands of islands and bays along the coast of British Columbia. The distance from Vancouver to Prince Rupert is less than 500 miles. But if you were a giant and could pull the coast straight, it would be 7,000 miles long. What a stretch of quiet, fairly shallow water for fish to feed! Fish by the millions swarm there from the Pacific—salmon, halibut, cod, herring. There they are caught. Machines cut off their fins and heads at the rate of 60 fish a minute. Machines chop the flesh into pieces, pack it in cans, salt and cook the fish, seal the cans, and paste on the wrapper—all untouched by hands. About half of all the canned fish eaten by British peoples throughout the world comes from British Columbia.

1. Name the four leading industries of British Columbia in the order which they rank in importance.

British Columbia faces west. British Columbia sits at the Pacific gateway to Canada with Vancouver as its great port. Ships go from Vancouver to China and Japan, to New York and England by the Panama Canal, and to many other countries. Vancouver is the largest Canadian city west of Toronto. Across the Pacific Ocean to the westward is East Asia. More than half of the people in the world live in eastern and southern Asia. These people need more of just about everything except people. They need more food, more clothing, more and better houses, more lumber, more machinery, more oil for their lamps and stoves and automobiles. Name any article you wish. The people of East Asia probably need more of it.

These hundreds of millions of people live on the other side of the wide Pacific Ocean. But distances are no longer important. The Pacific has ceased to be a "waste of waters" and has become a busy waterway and airway.

Some day the peoples of the world will learn not to make war any more. Then they won't have much use for armies, submarines, and bomber planes. Each country will be planning how it can buy and use more of its neighbor's goods in order that the neighbor may get money with which to buy their goods. When that day arrives, and we hope it will be in your lifetime, British Columbia will have to have many more people to handle its business.

1. Explain in your own words how modern means of transportation increase trade with other continents.

The Territory of the Yukon. Would you be surprised if we introduced the Yukon to you as a land of flowers—a mass of color during the short warm summer? You remember about the tundra. A part of Yukon is tundra. The first flowers to appear are the dainty pasque flower and the purple crocus. Later there are masses of poppy, Jacob's ladder, forget-me-nots, Dutchman's-Breeches, wild rose, bleeding heart, and lady-slipper. In early fall, the land is carpeted with reddish-purple fireweed. At the first touch of frost, the beeches and poplars are scarlet and gold against the blue sky. Flocks of birds are seen starting on their long journey to the warm southlands. Nature seems to be having one last gay party before putting on her robe of white for the long arctic winter.

1. Are you surprised to learn that the Yukon has many flowers, trees, and birds during the summer? Give the reasons for your answer.

Lead, copper, coal, zinc, silver, and gold are mined in British Columbia. Notice the nuggets.

British Columbia Govt. Travel Bureau

Burton Holmes from Ewing Galloway

From a hill above Dawson, in the Yukon Territory, you get a view of the Yukon River.

The St. Elias Mountains. In the southwest corner of the territory are the St. Elias Mountains. Here is Mount Logan, second highest peak in North America. Here are hundreds of other peaks that reach upward above 10,000 feet. On clear days these mountains can be seen for a hundred miles in all directions. Their snowy caps, shining in the sun, seem to float above the clouds that hide the glaciers and forests below.

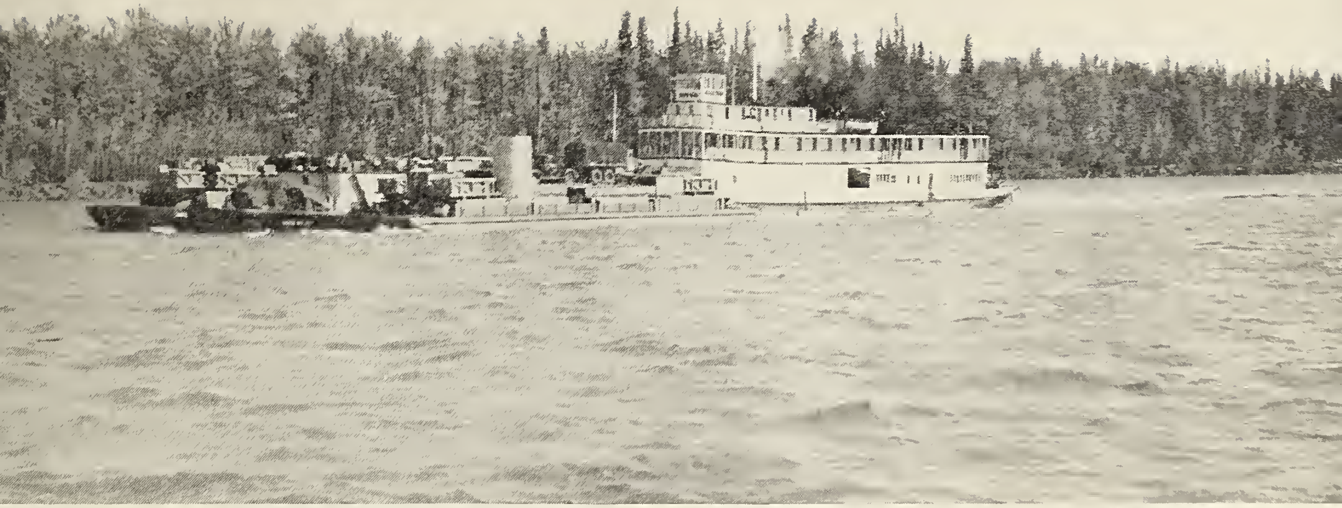
Valley of the Yukon. Most of Yukon Territory lies in the valley of the Yukon River. Here the thermometer may drop to 68° below zero in winter, and rise to 92° above zero in summer. Rainfall is light, about 13 inches, but that is enough rain for small garden crops of potatoes, oats, carrots, cabbages, and beets. So the few people who live here can have some vegetables.

There is a little trapping, but mining is the chief industry in the Yukon. There are mines of gold, silver, and lead.

Whitehorse and Dawson are the only towns in the whole Yukon Territory. Both towns are on the Yukon River; both are served by river boats from about May 15 to October 15. Planes make daily flights from Edmonton to Whitehorse and twice weekly to Dawson. A railroad connects river steamers at Whitehorse with the port of Skagway, Alaska, and the Alaska-Canada Highway passes through the territory.

1. There is only one short railway, one highway, one river for boats leading into the Yukon Territory. On what do you think the taking of the minerals and furs from the Yukon depends?

The Northwest Territories. Most of the land in the Northwest Territories is a part of the Laurentian Plateau. But there are two differences between the southern part of the plateau and the northern part. The weather becomes much colder as one travels northward, and the trees are fewer in number. These territories are larger than all the United States east of the Mississippi River. The few people who live there are mostly Indians in the interior and Eskimos along the arctic shore. "Big" and "empty" are the words that tell most about this vast land.



Royal Canadian Air Force

One of the boats of the Hudson's Bay Company steams along with a cargo for the trading posts.

There is a narrow strip of the Great Central Plain of North America continuing to the Arctic Ocean. This is the valley of the Mackenzie River, the river second in size among the rivers of North America. Oil has been found in the Mackenzie Valley, but there is no way to get it out. If the oil were carried on the boats that run on the Mackenzie River in the summer, it would cost too much because of the freight charge.

These territories may become a land of many mines. Some gold, copper, silver, and lead have been found, and much of this wild land has not been well explored. On the shore of Great Slave Lake is a mine from which about half of the world's radium is taken. Radium is an element, very scarce, but very useful to the doctor in treating certain diseases.

The tribes of Indians in the territories have names that sound funny to us: Dogribs, Yellowknives, Hares, Slaves, and Caribou Eaters. They make their living chiefly by hunting and trapping fur-bearing animals and by fishing. Sometimes they work for people who are opening mines.

The Canadian Government is trying to help the Eskimos to become reindeer herders. The government has a school where the young Eskimo may learn about reindeer. Then the government lets him have a certain number of reindeer. The Eskimo takes care of the animals, and later gives back to the government the same number of fawns or young deer. About ten thousand deer are now being cared for in the territories, and the herds are increasing.

When you visit the Eskimo, don't be surprised if Mrs. Eskimo mends your torn shirt on a small sewing machine. Eskimos now have something to sell; so an Eskimo can buy a sewing machine if he wants one.

The Hudson's Bay Company is an important name in northern Canada. This company was formed by a group of Englishmen. The King of England gave to them "all that land draining into the rivers flowing into Hudson Bay."

The company owned the land and everything on it or in it. The Hudson's Bay Company made the laws and ruled this large country and punished people who did wrong. The company built trading posts at which trappers—Indian, Eskimo, or white man—could sell their furs and buy food, clothing, traps, guns, and anything they might need which could be carried to these far places. Many cities and towns in Canada today began as Hudson's Bay trading posts.

For two hundred years, 1670 to 1870, this company owned a large part of North America. Then the company sold its rights to the Government of Canada, but it still runs trading posts in the northern forest where the trader exchanges jackknives and rubber boots for furs. The company also runs city stores in many parts of Canada.

1. How many persons live in the Northwest Territories? How many persons are there per square mile? Why are there so few people in this country?

2. Use a globe or map to locate the Great Slave Lake and the Mackenzie River. What important fact is there to remember about the lake? About the river? About the future of this large part of North America?

Something to Do

1. How many persons are there per square mile in Nova Scotia? In British Columbia? Give the best reason you can to explain the difference.

2. Discuss with your classmates the effect the winds blowing from the Pacific have on the climate of British Columbia.

3. Compare the average or usual winter and summer temperatures of the area in which you live with the average winter and summer temperatures in southwestern British Columbia. Can you think through the reasons why you have higher or lower temperatures in summer or winter than the people who live on Vancouver Island?

4. Choose one of the four leading industries of British Columbia and write a story about it.

5. Gather as many interesting facts as you can about the city of Vancouver. Use the facts to prepare a talk to give the class.

6. Make a list of pictures, of this part of Canada, that you would like for your scrapbook. Collect as many of the list as you can.

7. Write the words "rivers," "sea ports," "inland cities" across the top of your paper. Under the proper word write each of the following:

   a. Fraser
   b. Whitehorse
   c. Vancouver
   d. Mackenzie
   e. Prince Rupert
   f. Dawson
   g. Yukon
   h. Skagway
   i. Edmonton
   j. Calgary

8. Use sand or clay to make a model of a divide to show the parting of water.

9. Use these words and phrases in sentences to show their meanings:

   a. logging
   b. lumbering
   c. radium
   d. conifers
   e. fiords
   f. conservation
   g. oceanic climate
   h. Yukon Territory

10. Add your definitions of the words "conifers" and "fiords" to your geography notebook list.

11. Explain why the airplane is very important to the people of the Northwest Territories.

A Short Quiz

Copy the following sentences, choosing the right word from the words in the parentheses.

1. British Columbia has (extensive, limited) forests.

2. Gold was taken from the sands of the Fraser River by (panning, digging).

3. (Cedar, Oak) wood is very light and slow to decay.

4. Much lead comes from the valley of the (Columbia, St. John) River.

5. A large grain-shipping port is (Churchill, Vancouver).

6. Fruits and vegetables are grown (inland, along the coast) in British Columbia.

7. About half the canned fish eaten by British people comes from (Yukon, British Columbia).

8. Transarctic (airways, highways) may help to develop the northern Canadian territories.

9. (Mt. Logan, Mt. McKinley) is a high mountain peak in Yukon.

10. Some Eskimos in the northern territories are (reindeer herders, farmers).

United States Coast Guard

A giant iceberg makes a boat look like a toy. The men are planting mines in the iceberg to blast a path in the channel. Notice the underwater tongue of the iceberg.

Chapter 8

Newfoundland, Labrador, Greenland, and Iceland

Island stepping stones to Europe. Long before Christopher Columbus discovered America, people called Vikings came to America from Norway. The Vikings got into their boats in Norway and sailed to Iceland. Later they sailed from Iceland to Greenland. From Greenland the Vikings sailed to Labrador and on to Newfoundland. There is a very interesting story about this which you may want to read some time. In recent years many American airplanes have used this same route. The planes go from the United States to Newfoundland or Labrador, to Greenland, to Iceland, and to Europe. This is all very new and very different from what has been going on in Newfoundland for the last 200 years.

Newfoundland is a cold place. The water around it is cold because an ocean current brings it from Greenland, and the sea breezes make Newfoundland so cold that farmers cannot grow many crops there. So in the long years between the discovery of America and the coming of the airplane, Newfoundland was useful to men chiefly because of the fish that were caught in the waters near it. These were chiefly codfish, which the fishermen spread out to dry along the shores. But now new things are happening in Newfoundland. The age of machinery has found it.

1. Use a map or globe to tell the latitudes of Newfoundland. The latitude of northern Newfoundland is the same as the latitude of the southern Prairie Provinces. Why, then, cannot wheat be grown in Newfoundland as it is in the Prairie Provinces?

"Halfway House of the Atlantic." Newfoundland will be important in the world of tomorrow. Newfoundland lies on the shortest and most direct airway between the American cities of Washington, New York, and Boston, and the European cities of London, Paris, and Berlin.

Planes from the United States often land at Newfoundland before taking off on the long hop across the North Atlantic. Planes from Europe come down in Newfoundland before going on to airports in eastern United States. Newfoundland now has a great airport for seaplanes and also for landplanes. Taking care of these planes, of the passengers, and the cargoes, makes good, new jobs for many Newfoundland people.

Tourists and sportsmen. Newfoundland is very hilly, very rocky, and almost covered with trees. Very few people live in the forests but plenty of black bears, caribou, and moose live there. Nearly all Newfoundlanders live along the shore. Lakes and rivers cover more than one-fourth the land. Trout and other fresh-water fish are abundant in lake and river. Also flocks of wild ducks, geese, and other water birds come there. The coasts of the island are cut by many long bays. Salmon swim there on their way to fresh water.

As passengers in air liners look down on Newfoundland, they say, "What a place for a vacation! What a place to fish, to hunt, to go on long canoe trips! What a place for a camp in the great out-of-doors, beside a lake among the trees, and far away from the crowds and the hurry of the big city! Let's go to Newfoundland next year."

And they go. Taking care of these visitors from other countries is providing more good jobs for more Newfoundlanders.

1. How many persons are there per square mile in Newfoundland?
2. Where do most of the people on the island live? Can you tell why they choose to live in this area?

The city of St. Johns, Newfoundland, is the home of Memorial University. What is its chief industry?

Philip Gendreau

Paper — Iron — Fish — Seals. Gather some old newspapers—enough to weigh a pound. Pretend you have two thousand pounds of them. That would be a ton. Now pretend you have six hundred ton-piles of newspapers. That would be a lot of paper; but it is as much as one Newfoundland paper mill makes every working day. Spruce and other evergreen trees grow on Newfoundland's rocky land. That means jobs for the people—logging in the forests and working at the mills that make lumber, pulp, and paper. Lumber, pulp, and paper are new industries of Newfoundland.

We learned that Newfoundland's good ore is used to make steel in Nova Scotia. This big island, Newfoundland, the size of the State of Virginia, has other minerals also—lead, zinc, and copper. But fishing still employs more Newfoundlanders than any other business. They fish for cod on the Grand Banks, in the waters about the island, and along the shores of Labrador. Thousands of Newfoundlanders go cod fishing every summer along the coast of Labrador. Each year nearly 400 pounds of fish are exported for every man, woman, and child on the island. Many steamers call at St. John's, the capital and chief city. It has over forty thousand people.

The Newfoundlanders also catch seals. These animals swim down once a year from the north and stay for a while in Newfoundland. Here the baby seals are born. Men catch some of the herd and use the sealskins for fine leather bags and the fat of the seal for oil.

The farmers can grow only a few crops—turnips, potatoes, and hay. The summer is too cool, the land is too stony, and the soil is too poor for the island to expect to have many farmers. It is easier for the Newfoundlanders to dig ore, chop wood, catch fish, sell something, and buy food from Canada and the United States.

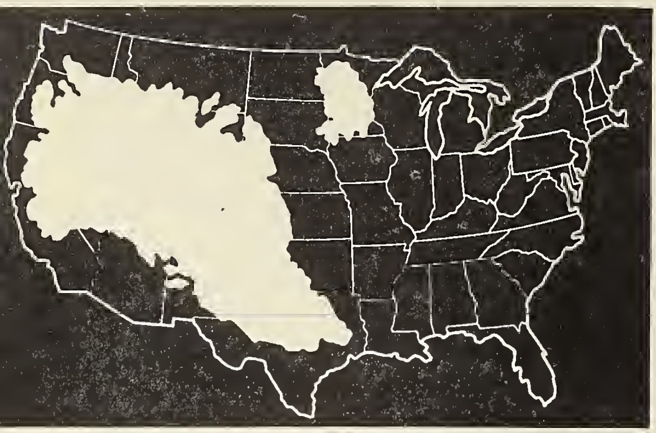
Too many Newfoundlanders live by the sea and from the sea. Sometimes the catch of cod or seal is poor or the price goes down. Then the people are poor and they can't pay their bills.

More of these island people must stop being fishermen just because their fathers were fishermen. They must take new jobs. Maybe quick freezing and the sale of fish as frozen food will help.

1. What kinds of trees furnish raw materials for paper making?
2. What is the name of the good fishing grounds around Newfoundland?
3. Check the appendix for the size and population of Labrador. How many persons are

Tackle is needed to bring in one of the "big ones," a fin-back whale, in Hawkes Harbor, Labrador.

© Capt. Bartlett from Philip Gendreau



The maps of Greenland and Iceland cover about one-fourth of the area of the United States.

there per square mile? Read the next paragraph to find the reason why there are so few persons in Labrador.

Labrador. Labrador belongs to Newfoundland. We know about Labrador chiefly through the unselfish life of one man. This was Wilfred Grenfell, an English missionary and doctor. He lived among the people. He helped them to sell fish. He taught them to grow gardens. He built hospitals for them, and schools for the boys and girls. He taught the people how to be more comfortable and to have better health in a land where the weather is very cold, very snowy, very foggy, and very windy for more than half the year. It is very chilly in Labrador even in summer because of the current of ice-cold water that comes from Greenland and flows along the coast. The current carries floating ice and icebergs.

Labrador may be a big ice box, but the box is not empty. If anyone cares to open the door, he will find inside:

1. Forests enough to cover the whole state of Maine.
2. Plenty of lakes to hold water on this interior highland, and waterfalls and rapids to make power.
3. Moss to feed reindeer.
4. Fertile spots where some vegetables can be grown—radishes, lettuce, cabbage, potatoes.
5. Labradorite—a very beautiful stone that takes a high polish. Other minerals.
6. And of course fish, the most important of all.

St. Pierre—Miquelon are tiny islands, just south of Newfoundland. They belong to France and are all she has left in North America. Fishing boats from France catch cod nearby and dry them on these little islands. Nearly every one of the four thousand people who lives on these islands catches cod, dries cod, talks cod, thinks cod, eats cod, sells cod—and the two towns smell of fish.

1. What industries do you think might be developed in Labrador from the six resources listed here?

Greenland's airfields and weather stations. We, in the United States, began to be more interested in Greenland and Iceland when the air age came. The United States has built weather stations and airfields in Greenland and Iceland. The weather observers in this far north tell ship captains and airplane pilots what weather they may expect in crossing the North Atlantic, so you can be carefree as you fly in the world of tomorrow. Your pilot knows the weather ahead and has a good landing field if he has engine trouble.

1. Do you think airports in Greenland and Iceland could be of help to the people there? Explain your answer.

They called it "Greenland." Greenland is the largest island in the world. If placed on North America, it would cover

Yukon, British Columbia, and the states of Washington and Oregon.

Most of the island is covered with a thick layer of ice, and the ice is covered with last winter's snow. In some places the ice is more than a mile thick. Terrible winds blow across the top of this ice sheet, and the thermometer may drop to 85° below zero.

Near the southern shores the weather is milder. The snow melts each spring. Moss, grass, flowers, and very small bushes grow. In the summer as one sees the land from the sea, it is green with splashes here and there of red, white, and yellow flowers. So the Norsemen, sailing along the coast hundreds of years ago, called the island "Greenland."

Mother of icebergs. The Greenland Ice Cap is really a great glacier like the ones that covered Canada long ago. It moves slowly to the sea. Chunks called icebergs break off. Some are as big as your school, some are much larger. The bergs float away. The Labrador Current carries them southward, and they meet the warmer waters of the Gulf Stream near the Grand Banks.

Ship captains used to fear icebergs. If a boat, at full speed, hit a berg, the ship went down. But now radar locates an iceberg exactly. The radio man on the ship sends out radio waves. If they strike an iceberg, back the waves bound like a rubber ball from a brick wall. Radar has told the captain where the iceberg is.

© Capt. Bartlett from Philip Gendreau

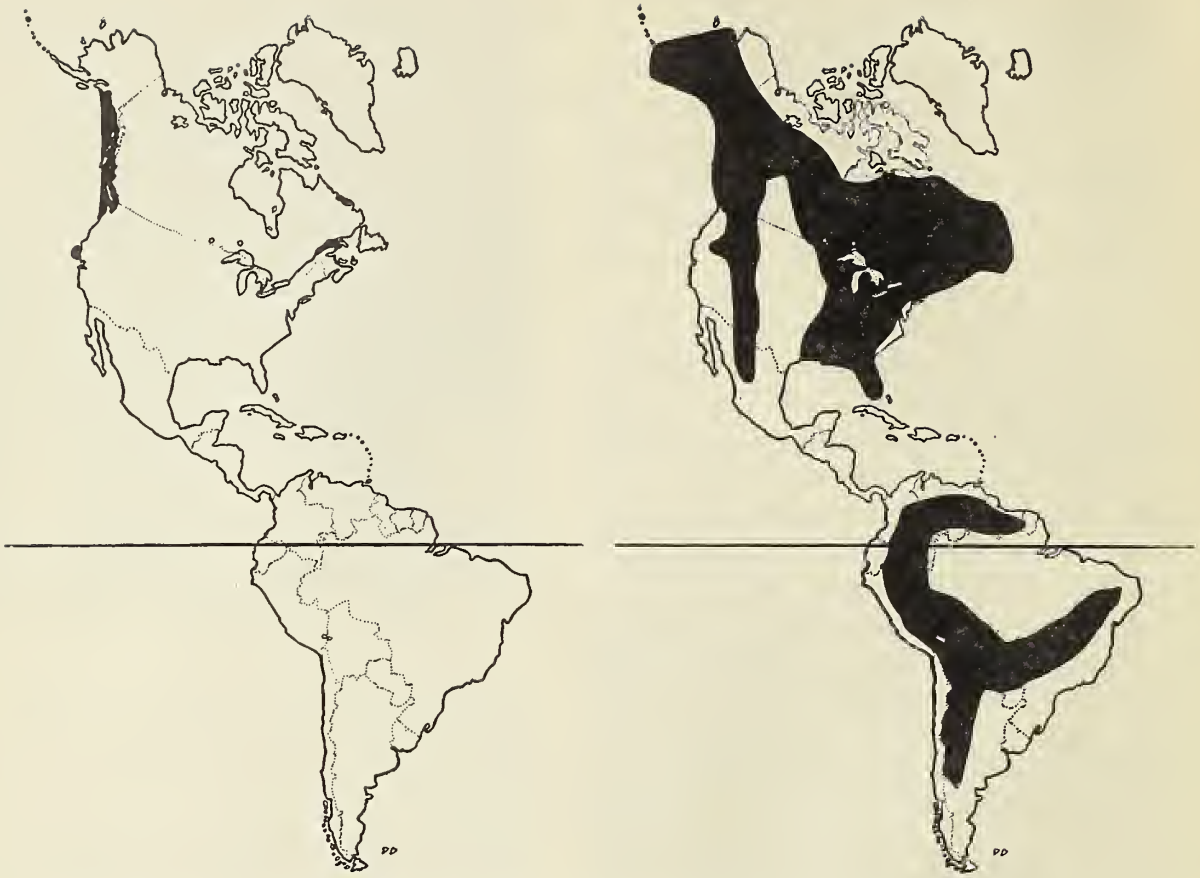
A Greenland Eskimo family poses for the photographer. How did Greenland get its name?

1. Where cold air and warm air meet, there is often fog. Can you explain why there is so much foggy weather near the Grand Banks?

A colony of Denmark. Greenland is a colony of Denmark, a country in Europe.

The Icelandic parliament meets in the stone building below. To the left is the cathedral.

Burton Holmes from Ewing Galloway



Salmon and furs are two of the most important Northland products. The maps show the products' location in the Americas. They are called distribution maps. Which areas have the salmon industry? Do salmon live in warm or cold waters? Prove this statement: Temperatures do not determine areas for breeding fur-bearing animals.

There are four hundred Danes in Greenland. The rest of the people are Eskimos. The Danes take care of the government of Greenland. They mine cryolite, a mineral found only in Greenland. Cryolite is used in separating aluminum from bauxite. Bauxite is a clayey substance which contains aluminum.

Most of the Eskimos make their living by hunting seals and by fishing. If an Eskimo wants to buy some goods from the white men, he catches fish or seals, traps a white fox, and trades with the Danes. Some canned fish are exported to Denmark.

Iceland. Iceland is sometimes called a land of ice and fire, and it has plenty of both. It has Mount Hecla, one of the largest volcanoes in the world. Six-sevenths of the surface of the island is bare lava rocks and coarse sand where nothing grows. About one-sixth of this waste is snow-covered all the year.

Really Greenland and Iceland should exchange names. Greenland has so much ice, and the weather there does get so very, very cold. Reykjavik, capital of Iceland, however, is no colder in January than is New York City. Iceland summers are cool. You would say "chilly." In the warmer parts, they say it is a hot day if the thermometer goes to 58°. The summer is so cool that trees will not grow; neither does wheat, nor corn. Indeed the only crops that Icelanders grow are hay, potatoes, and some turnips. They grow two or three bushels of potatoes per person. They must buy all other farm crops except milk, mutton, pasture grass, and hay. Hay is the chief crop. They make three times as much hay per person as we make in the United States. Some of the hay is fed to horses and cattle, but most of it is fed to sheep. The Icelanders send mutton, wool, and sheepskins to Europe.

"How do you heat your house?" we asked a friend from Iceland.

"By hot water."

"Do you burn coal or oil?"

"I never bought a bucket of coal or a quart of oil for heating in my life. Hot water is pumped to my house from hot springs. In my back yard I have a greenhouse also heated with hot spring water. I grow vegetables, berries, and even grapes and melons in my greenhouse. I would grow peaches if the roof were high enough for peach trees.

"Our island has many hot springs. In one place a big rock stands in an ice-cold stream. From the top of the rock a boiling hot spring bubbles. We even have swimming pools heated by Nature."

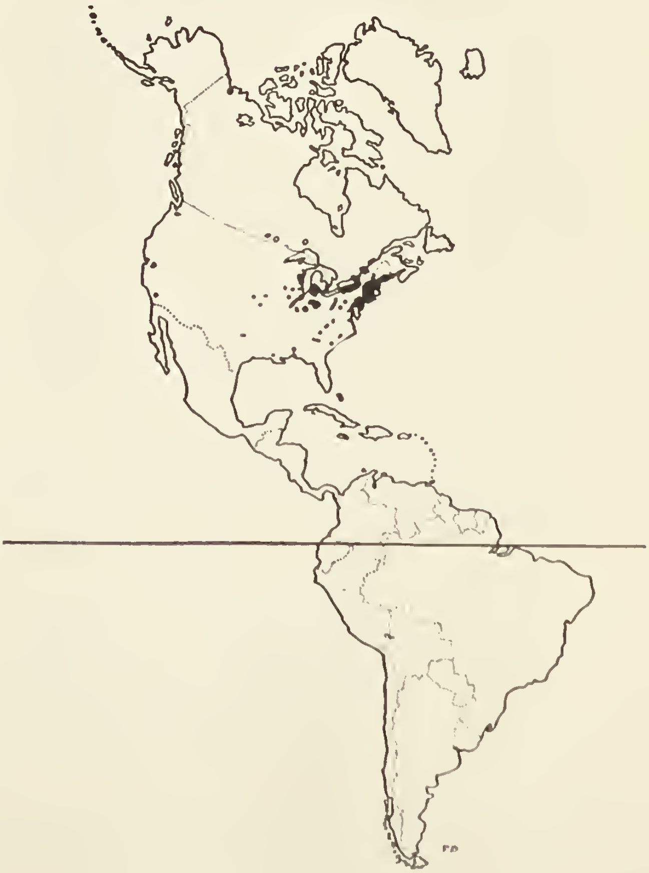
1. What is the latitude of Reykjavik, the capital of Iceland? Of New York City? Which city is farther north? Which city should be colder in winter?
2. What effect does the Gulf Stream have on Iceland?

How Icelanders make a living. Most people in Iceland are farmers or fishermen. Many are both farmers and fishermen.

The men get into their boats and go fishing for codfish and herring when farm work is slack. Icelanders lead the world in fishing. They catch about seven thousand pounds of fish for every person on the island. They sell fish and fish meal for cattle food, and the very best cod liver oil. Ninety-four cents of every dollar Iceland gets from other countries comes from the sale of fish products.

The oldest parliament. Iceland was settled by people from Norway in the year 874. From 1381 to 1918, Iceland was a colony of Denmark, but the people made most of their own laws. Now it is a separate kingdom with unlimited power of its own, but the king of Denmark is also the king of Iceland.

The paper industry is distributed in this way.



There are many things about the Icelanders that other nations might well follow. One is education. Every person in Iceland can read.

The Icelandic parliament is the oldest parliament in the world. It was 1,000 years old in 1930 and had a birthday party. The Congress of the United States sent a present—a statue of Leif Ericson. He was the first man from Europe to set his foot on the continent of North America.

1. Think of the answers to these questions about Iceland:
    a. Why is it a "land of frost and fire"?
    b. How do the people make a living?
    c. Why is the horse an important animal here? Why are there few automobiles in Iceland?

Something to Do

1. Explain why Newfoundland is sometimes called the "Halfway House of the Atlantic." Use a globe or map to help you.
2. Discuss with your teacher the land surface of Newfoundland. Talk about the reason for so many lakes and rivers and for the long bays along the coasts. Keep in mind the rough coast of British Columbia.
3. List three reasons why the farmers on Newfoundland can grow only a few crops.
4. Write a paragraph explaining why this statement is true: "Too many Newfoundlanders depend upon the sea for their living."
5. What do you think Labrador would be like if the current along the coast were warm instead of cold?
6. Use a globe or a pole-centered map to help you understand better the meaning of "island stepping stones." Locate New York City; then locate Moscow, Russia. What islands lie in the path between New York City and Moscow? In what ways could these stepping stones be useful to the people in the United States?
7. You may want to read more about the use of radar. Look for magazine articles or in a reference book about radar.
8. Look in a dictionary for the meanings of the following words. Use them when you talk or write about Greenland and Iceland.

lava	cryolite
bauxite	parliament

9. Learn to write the names of the colony and the islands you read about in this chapter. Learn, also, to pronounce correctly the capitals of each. Use the glossary to help you.
10. Write a letter to a friend. Tell why Iceland is a better place than Greenland in which to live.

A Short Quiz

Copy the sentences and fill the blanks.

1. Greenland is the largest ______ in the world.
2. Three-fourths of Greenland is covered by ______.
3. Cryolite is a ______ useful in making ______.
4. Newfoundland has large deposits of ______ ore which is used in making steel in Nova Scotia.
5. Newfoundland is very ______, with many rocks and trees.
6. The largest and most famous fishing place is known as the ______ ______.
7. Newfoundland's chief industries are ______ and ______.
8. The capital and largest city of Newfoundland is ______.
9. Airfields and weather stations on ______ and ______ make them stepping stones between Europe and America.
10. Greenland is a colony of ______.

Stories You Will Enjoy

Coast Guard to Greenland by Anne G. Molloy—Houghton

Petite Suzanne by Marguerite De Angeli—Doubleday

Starbuck Valley Winter by R. L. H. Haig—Brown-Morrow

Fog Magic by J. L. Sauer—Viking

North After Seals by T. R. Williamson—Quinn

Top of the World by Mrs. Alice Crew Gall and H. Fleming Crew—Oxford

Eric the Red by Mrs. Lida Siboni Hanson—Doubleday

Salmon, Fur, and Paper

Many of the Northland workers earn a living in the industries of salmon, fur, and paper. The distribution maps show the Northland countries having a large share of these products. You will be interested in the steps or operations workers perform to turn the raw materials into finished products. On each of the following three pages an artist has painted and arranged in a panel a series of pictures showing steps in the production or manufacture of these Northland products—salmon, fur, and paper.

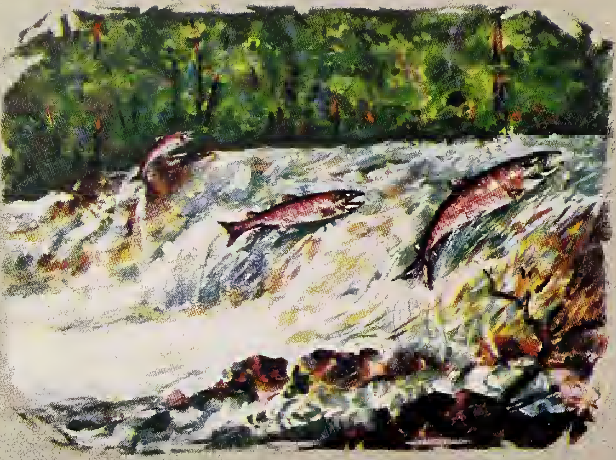
The panel on the salmon industry shows the salmon from stream to grocery store. Study each picture carefully—men holding a net filled with salmon and loading boat; factory workers cleaning, washing, and cutting the salmon into small pieces, and then sealing it in jars and cans, and finally customers buying salmon in the grocery store—the entire story of salmon from the sea to your market basket.

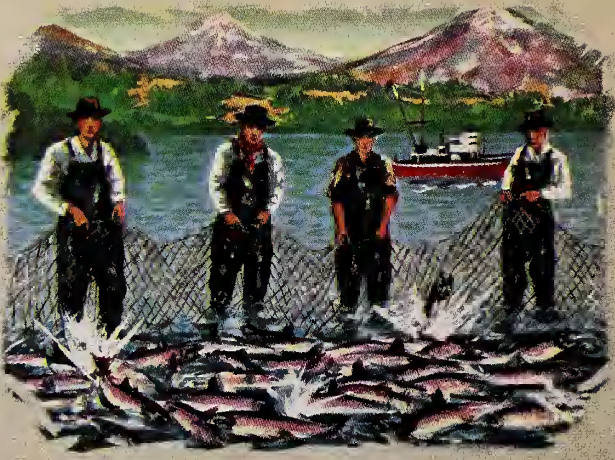
The story of fur begins with the trapper hunting fur-bearing animals. Some of our furs come from fox and mink farms or ranches, but most of them are taken by hunters and trappers. The trapper scrapes, stretches, and dries the pelts or skins before his bundle starts to the factory. Here workers make the pelts into fur trimmings, jackets, and coats.

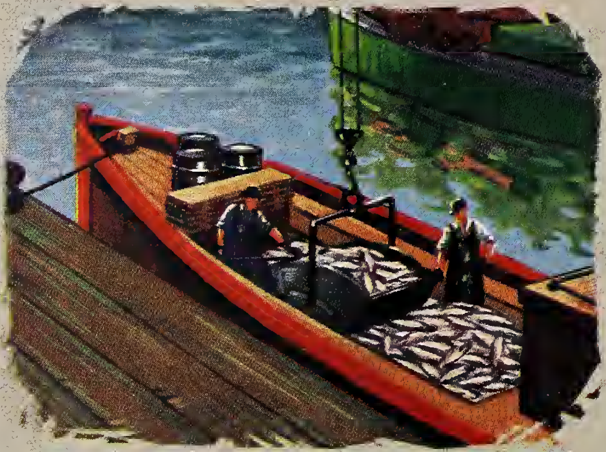
The third panel in this series tells the story of paper from tree to newspaper. Lumbermen fell the trees and stack the logs in piles. Sleds then carry the logs to a river whose current carries the logs downstream to a mill. Huge machines grind the wood into pulp. The pulp is mixed with water. Heavy rolls then press out the water, and there is your large sheet of paper. You see it on the market in the form of newspapers, magazines, and books.

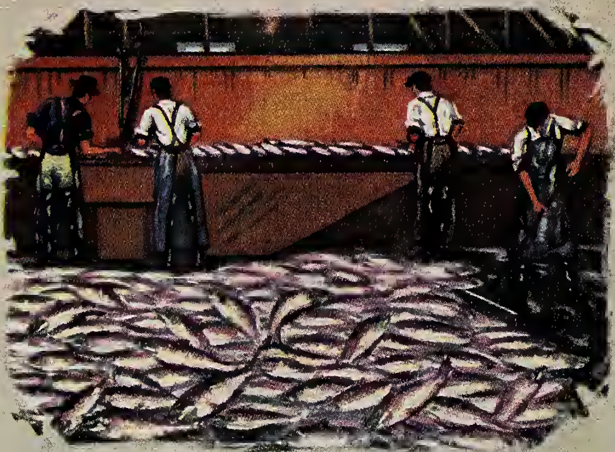
The panels show most of the important operations in turning the raw material into a consumer's product. Examine carefully the picture stories of salmon, fur, and paper. Then answer these questions: which product requires the largest number of workers? which has the most consumers? Compare the transportation methods; the sales methods. You may want to read more about one of the materials and prepare a word picture of its production.

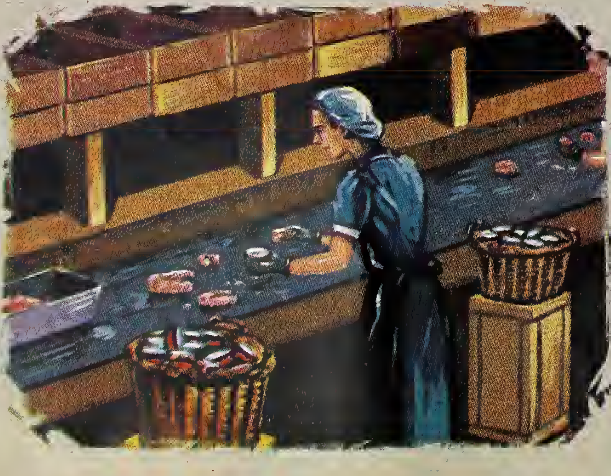
Salmon

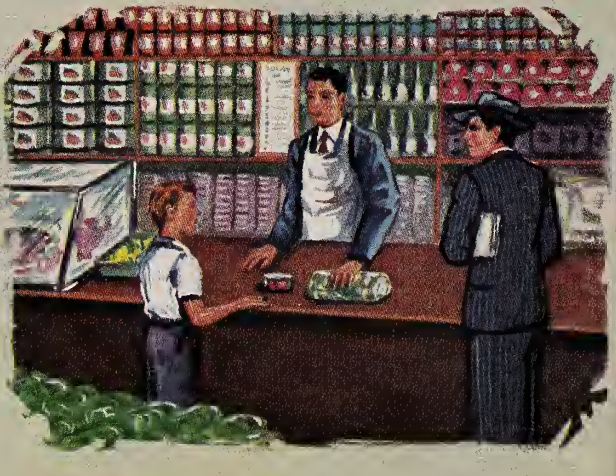






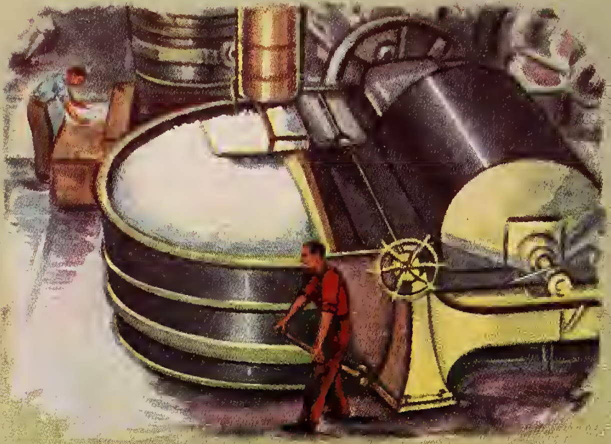


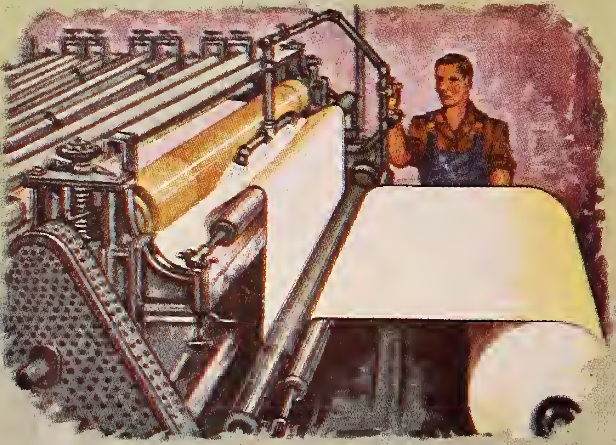


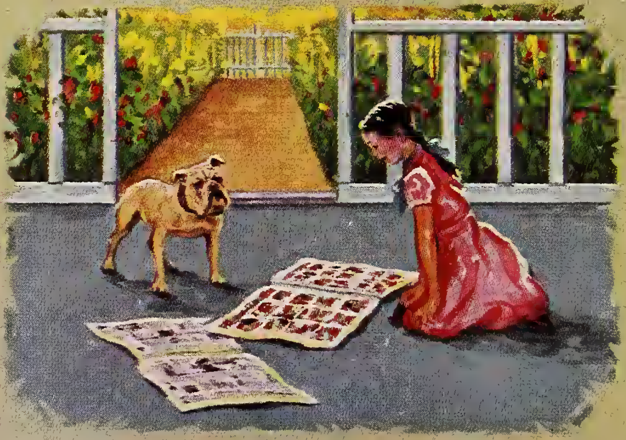


Fur

Paper







American Airlines

The business of government is carried on in Washington, D. C., our nation's capital.

Unit III—The United States

Chapter 9

How the United States Grew

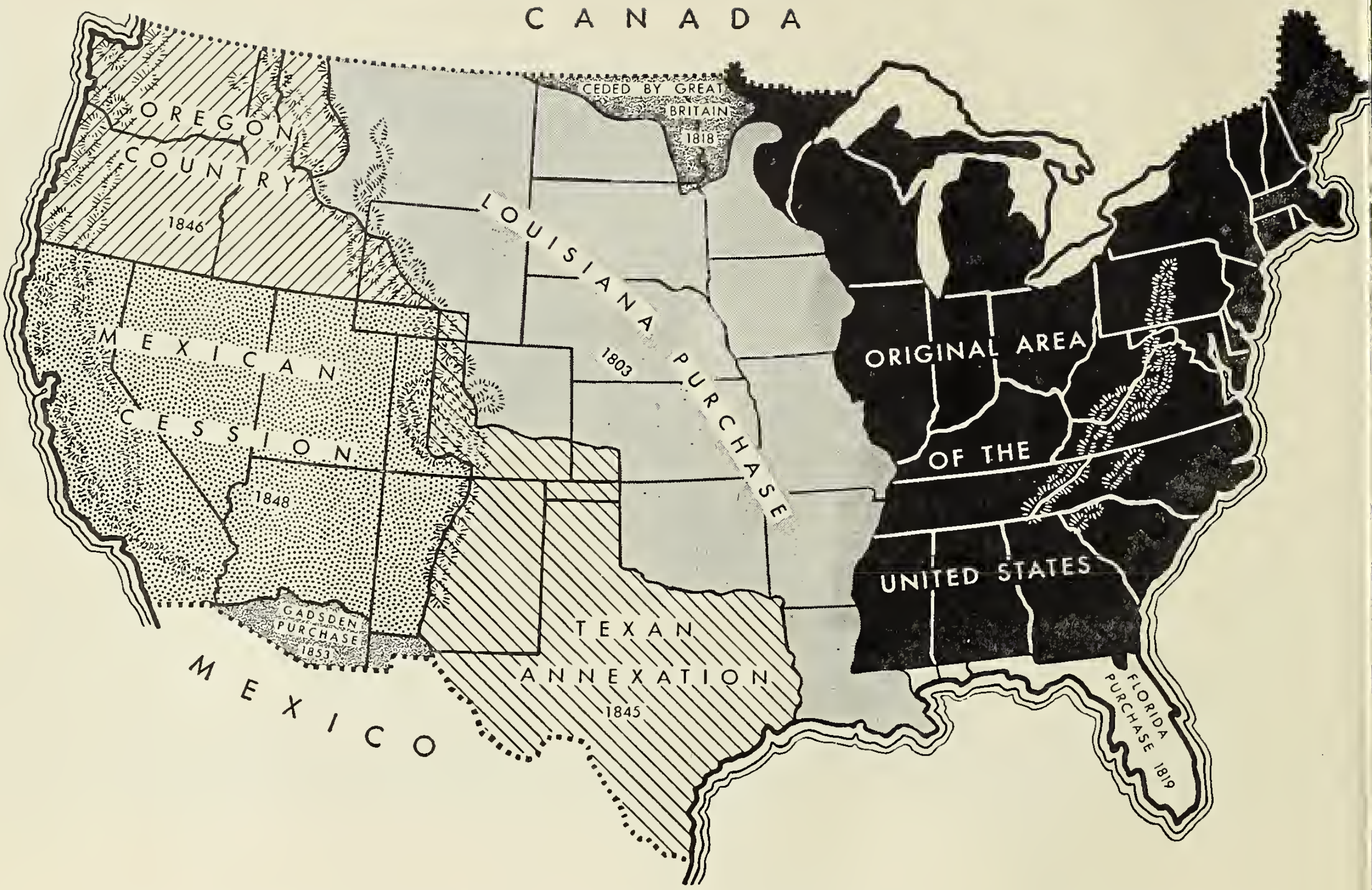
Miss Clark hangs a large map of the United States where all the class can see it. The boys and girls open their geography books to a map of our country somewhat like the map on the wall. They are going to talk about the United States of America. They will try to understand these two important pictures:

1. How it grew from a small country to a very big country.

2. How the country looked to the President of the United States as he flew 3,000 miles from coast to coast, between breakfast in the morning and dinner in the evening of the same day.

The United States begins. "The United States," says Miss Clark, "is a young country—oh, so much younger than is Iceland—younger than is England, mother of the British family of nations. The people who landed at Jamestown in 1607, and the Pilgrims who stepped ashore on Plymouth Rock in 1620 were English.

"Our country did not become the United States until more than 150 years



Study this map showing the growth of the United States from a small country to a very big country.

later. It was in Carpenter's Hall, in Philadelphia, Pennsylvania, September 5, 1774, that the United States of America had its beginning. On that day and in that place, men from the English colonies in America got together.

"George Washington, Patrick Henry, and Richard Henry Lee were there, and John and Samuel Adams and John Jay. These men, and fifty others, formed the First Continental Congress. They decided that this 'Land of the Pilgrims' Pride' must also be a 'Sweet land of liberty.' And it is so to this day.

"The people of the English colonies in America," continues Miss Clark, "lived along the Atlantic coast from southern Maine to Savannah, Georgia, and westward to the Appalachian Mountains. Some brave men and women had worked their way through the rough mountain country and made homes beyond the Appalachian Mountains. There were not many of these settlers, because the journey over the mountains was very hard, and the Indians were often unfriendly.

"Now," says Miss Clark, "place your left hand on your map. Place it along the Mississippi River, and put your right hand along the Atlantic coast. The land between your two hands became the United States of America at the close of the Revolutionary War. England, however, still held Canada, while Florida belonged to Spain."

1. Use a globe or a physical map to trace the boundaries of the land that became the United States at the close of the Revolutionary War. Why do you think this seemed a big country to the early settlers?

The Louisiana Purchase. Miss Clark continues her story. "Of course you know about Daniel Boone, one of the early settlers of Kentucky. By the end of the Revolutionary War, Daniel Boone and about 25,000 other white people had found their way through the Appalachians. All mountain ranges have gaps. The word means an opening or pass. One of the passes in the Appalachian mountain wall is the Cumberland Gap. To find it on your map, put your finger on the west tip of Virginia where that state touches the Tennessee boundary line.

"More than 300,000 settlers, as they were called, had poured through the Cumberland Gap by the year 1800. If you had lived there at that time, you would have seen covered wagons drawn by oxen or horses passing your cabin every day. Mother, the girls, and the baby might be riding in a wagon surrounded by their furniture and the food for the trip. Father and the boys might be walking alongside, or riding horses. A cow or two might be tied to the back of the wagon. Year after year, the settlers rolled on through the mountains and along the streams flowing into the Ohio River.

"The first settlers took land and made farms near the Ohio River, chiefly in the states we now call Kentucky and Ohio. They grew corn and other crops. They raised pigs, cows, and chickens. Soon the settlers had ham and bacon and tobacco to sell, as well as grain and the skins of fur-bearing animals they caught in the forests. Flatboats on the Mississippi River carried the goods to market.

" 'May we put our products aboard ships at New Orleans and send them across the sea?' asked the Americans. 'No,' replied the French, who owned the city. 'You may not use New Orleans as a port unless you pay taxes to us.'

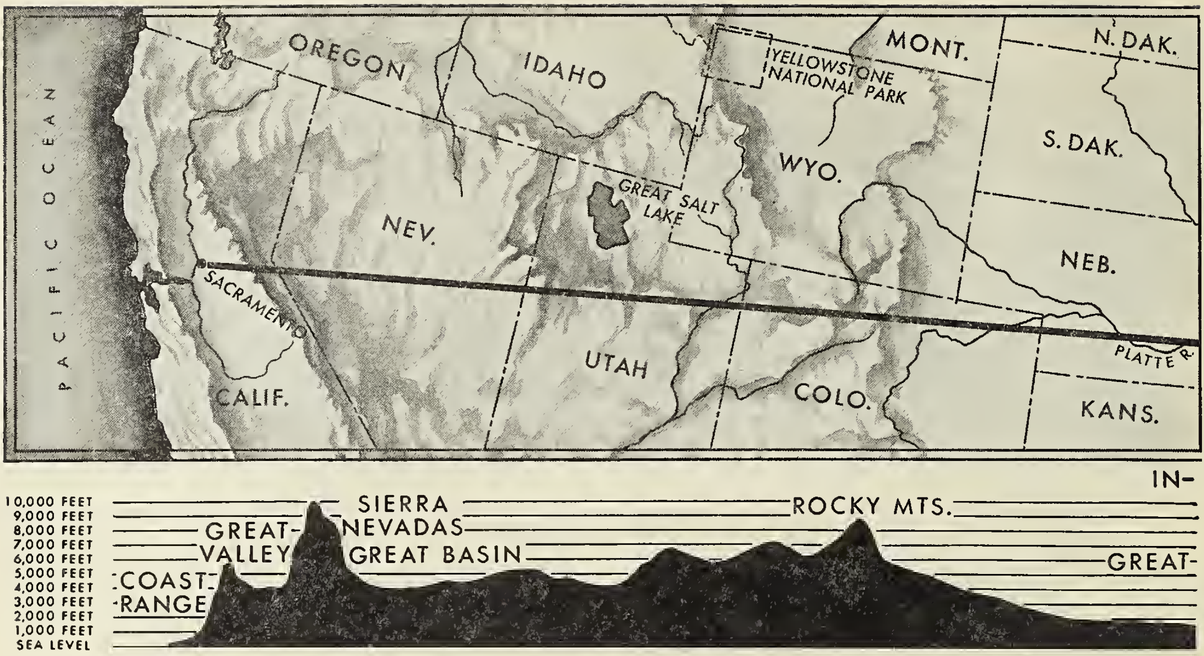
"This was serious business for the settlers. Unless they could sell what they raised, they could not buy what they needed. So the President of the United States, Thomas Jefferson, sent James Monroe to Paris in 1803 to talk with Napoleon Bonaparte, the ruler of France. James Monroe offered Napoleon Bonaparte two million dollars for New Orleans. Napoleon said, 'Take all of Louisiana for fifteen million dollars.' Monroe accepted the offer in a hurry, and President Jefferson and the American people—nearly all of them—said, 'Well done!'

"But Louisiana in 1803 did not mean the same as the State of Louisiana means today. Now it is one state. What was then called Louisiana was enough land for the making of 15 states. The land lies between the Gulf of Mexico and Canada, the Mississippi River and the Rocky Mountains. Neither Monroe nor Napoleon knew how big Louisiana was, nor did they know what was there.

"By making this purchase from the French, President Jefferson more than doubled the size of the United States, at a cost of less than three cents an acre."

1. Why was it better to send products through the port of New Orleans than to take them across the mountains to the Atlantic ports?
2. Use a map to help you make a list of the states that were formed wholly or in part from the land added to our country by the Louisiana Purchase.

Spain gives up Florida. Miss Clark continues the story. "On Easter morning, in the year 1513, Ponce de Leon, a



The course the President's plane followed from Washington, D. C., to Sacramento, California, is a very direct route. The drawings on these pages show the topography, the surface features, of this part of our country. The diagram shows the height of the land at places along the plane route.

Spaniard, landed on a sandy shore which he called Florida. He had sailed with Columbus and now he came back to America to find the fountain of youth. He believed that he would become young again if he bathed in water from this fountain or spring.

"Other Spaniards came to Florida. They founded St. Augustine, 1565, the oldest town in the United States. By a treaty in 1819, a few years after we bought Louisiana, Spain ceded East and West Florida to the United States. We paid about five million dollars and we got more than enough land for a great state."

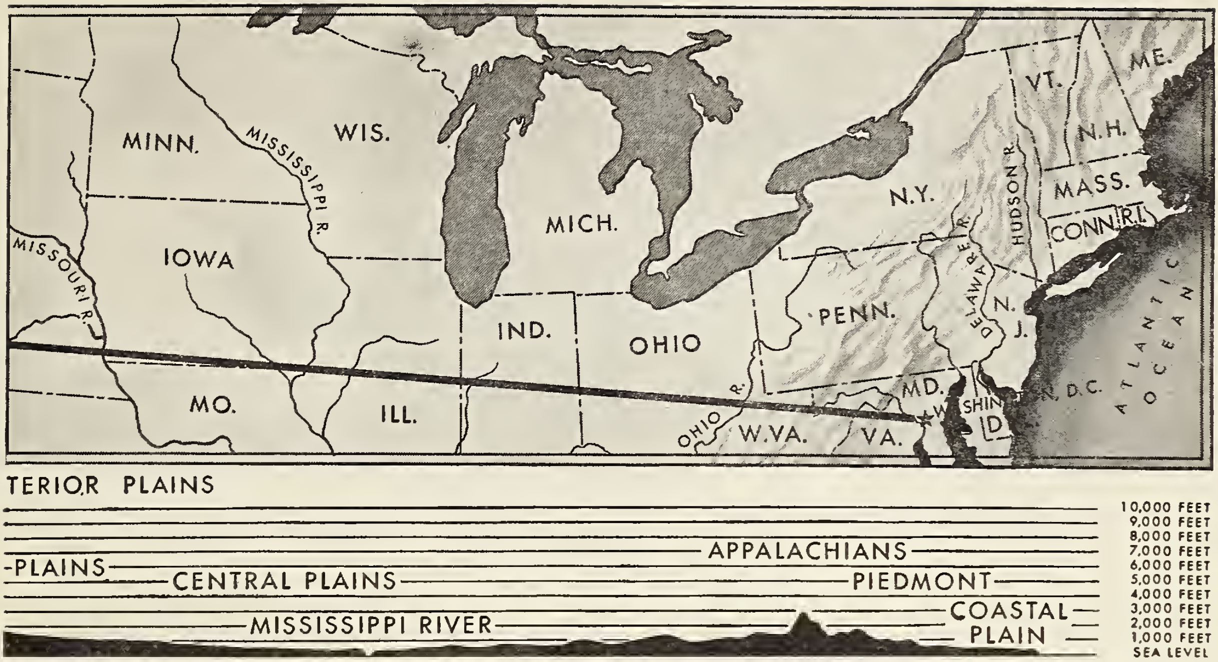
Texas. "People from Spain had settled every country in America south of the Rio Grande and west of the Louisiana Purchase, except Brazil.

"Soon after the United States became an independent country, the peoples of South and Central America began to break away from their mother country, Spain, and form free countries. In 1821 Mexico became free from Spain, just as the United States had become free from England.

"Remember," says Miss Clark, "in those days Mexico included the country we now know as Mexico and all of the Spanish land to the north. This land was empty, except for a few white settlers and some Indians. In the North were some Eskimos.

" 'Come live with us and we will give you a farm,' said the Mexican Government to people in the United States. At least twelve thousand persons accepted the offer and moved to Texas in a few years.

"But the Americans were not happy there. They did not like to live under the Mexican Government and laws. They would not take orders from the Mexican army. Trouble and more trouble! So



How many states or parts of states did the President see on his trip? The Appalachians rise 3,000 feet above sea level. How high are the Rocky Mountains? What is the lowest feature shown? The highest? If you could have a trip from coast to coast, how would you like to travel?

much trouble that on March 2, 1836, the people of Texas said, 'We are a free country.'

"Mexico said, 'You belong to us,' and sent an army into Texas. Santa Anna, President of Mexico, was general of the army. His soldiers surrounded an old mission building, the Alamo, in San Antonio. Texas soldiers were inside the building. Some were sick, some were wounded. All were killed. This was a bad mistake indeed. Such things sometimes happen in war. And both sides usually are sorry after the blunder has been made.

" 'Remember the Alamo' became the cry of the Texans. In less than three weeks, Santa Anna was a prisoner and his army was scattered. Texas became a republic.

"But most of the people of Texas were Americans. They asked the United States Government to let Texas be one of our family of states. So, on December 29, 1845, the lone star in the flag of Texas became the 28th star in the American flag.

"Texas had become free from Mexico and had become a part of the United States. The people of Texas and of the United States said the boundary was the Rio Grande, more than a hundred miles south of the Nueces. But Mexico said that when Texas was part of her country, the boundary was the Nueces River.

"President Polk sent an American army into the land between the two rivers. Mexico sent an army there, too. And the Mexican War began in April, 1846.

"In less than two years, Mexico had lost all the country we now call New Mexico, California, Nevada, Utah, most of Arizona, and also parts of some other states. Our Government paid Mexico about 18 million dollars to make the Mexicans feel better about their losses."

1. Why did the Mexican Government invite people from the United States to settle in Mexican territory?

The Gadsden Purchase. "The map of Arizona shows a river whose name is the Gila," says Miss Clark. "Just south of the river is a gap in the mountains.

" 'What a fine place to put a railroad through to the Pacific,' said some people in the United States. 'Let us ask the President to buy this small piece of land.'

"So in 1855 Congress paid ten million dollars for the strip of land between the Gila River and the present border of Mexico. This is known as the Gadsden Purchase."

1. On a map trace with your finger the land bought from Mexico for 10 million dollars. Tell why this purchase was made.

The Oregon Country. The next day Miss Clark continues her story about how the United States grew. "After President Jefferson had bought Louisiana, he sent for his secretary, Meriwether Lewis. 'Take William Clark and as many men as you need, and get acquainted with this land we bought from France. Then cross the mountains and go on to the Pacific Ocean. When you get back, tell me what you learned about that western land.'

"Lewis and Clark traveled up the Missouri River in 1804, crossed the Plains, the Great Divide, and the Columbia River, and went on to the ocean. They were gone many months. Soon several thousand settlers from the United States went into this new land. Their covered wagons rolled over the famous Oregon Trail.

" 'Oregon belongs to the United States,' said these settlers. 'But not all of it belongs to the United States,' replied England. 'Our men have also traveled through that part of the country, and some have settled there. It belongs to England.'

"Then the two great English-speaking countries did a wise thing. They did not go to war over a piece of land. They divided the land. The United States got the piece which is now Oregon, Washington State, and Idaho.

"Today the map of the United States covers the continent from coast to coast."

1. What was the purpose of the Lewis and Clark expedition? What was the result?

The President goes visiting. "After breakfast one morning, the President of the United States left Washington, D. C. to pay a visit to his friend, the Governor of California. The President thought he would like to take a look at the United States as he made the journey.

"As he went from the White House to the airport, his automobile rolled along over flat land—a small piece of the Atlantic Coastal Plain of North America. This plain lies along the Atlantic coast from Cape Cod southward until it joins the broader plain along the Gulf of Mexico.

"As the President's airplane headed westward, it flew above some rocks that made a rapids in the Potomac River. Beyond the rapids, or falls, the land was hilly. Up and down and roundabout went the roads. This hilly land west of the Coastal Plain is called the Piedmont. Piedmont means at the foot of the mountain.

"Off in the distance was something blue—a range of mountains. The mountains were covered with trees. The

Ewing Galloway

The gold seekers of '49 had no planes to speed them in finding riches. The journey by wagon into California on the southern part of the Oregon Trail was long and hard.

President knew the leaves of trees are green, but the mountains seemed to be blue from where he sat. He was looking toward the Blue Ridge—the eastern range of the Appalachian Mountains. In a few minutes the plane crossed the Blue Ridge, and then more ridges.

"Still more ridges of the Appalachians came into view. These mountains, as you see on your map, extend all the way from Alabama to the Gulf of St. Lawrence. You see the last of them in Newfoundland.

"While the President watched, the mountains seemed to melt away. The airplane was approaching the Great Central Plain of North America. Here were cities and towns, farms and some woodland, all bound together, so it seemed, by roads and railroads. Creeks flowed into larger streams, the streams into rivers. The rivers all make their way to the Mississippi; and that great river keeps rolling along to the Gulf of Mexico.

"An hour after crossing the Mississippi River, the President looked down on a land where there were fewer towns and streams and woodlands. Fields where crops were growing gave way to great open spaces where cattle and sheep walked about and ate grass. The airplane was over the Great Plains of North America.

"Far ahead, a mighty wall seemed to lift itself out of the haze, its top glistening white in the sun. This was the east front of the Rocky Mountains, and the white part was the snow upon their tops.

" 'Flight No. 5, near Denver,' radioed the pilot.

" 'Flight No. 5, near Salt Lake City.'

"The President looked down on farms near the city and the waters of Great Salt Lake. He soon saw ranges of mountains, with trees and bushes on their tops, and dry valleys between the ranges. He was over the Great Basin. No streams flow out of this basin.

" 'But keep on looking ahead, Mr. President. Soon you will see some of the grandest mountains in the world—the Sierra Nevadas.'

"The pilot climbed higher and higher. He must go above 15,000 feet to fly safely over these mountains. Then he was over the hump and going down over green forests to the Great Valley of California. The Coast Ranges cut the valley off from the Pacific, except for the opening that lets the rivers flow into San Francisco Bay.

"The President's plane glided down to the airport at Sacramento, the capital of California. The Governor of California was there in his car to meet the President. Radio had told him when to come.

" 'Good afternoon, Mr. President,' said the Governor. 'Welcome to California. You are in time for an early dinner.' "

1. Use a map of the United States to trace the President's journey across our country. Locate:
   a. Washington, D. C.
   b. Atlantic Coastal Plain
   c. The Piedmont
   d. Appalachian Mountains
   e. Mississippi River
   f. The Great Plains
   g. Rocky Mountains
   h. The Great Basin
   i. Sierra Nevada Mountains
   j. The Great Valley of California
   k. The Coast Ranges
   l. Sacramento, California

Something to Do

1. Chapter 9 tells how the United States grew from a small country to a very large one of forty-eight states. It also tells about the different kinds of land—the plains, mountains, valleys—that make up this country. In the next chapters you will study these states and the people who live in them. You will learn that we have a country rich in the things people need to make a living.

As you are studying the geography of the United States, you may want to read more about its history.

2. Discuss with your classmates the following questions:
   a. Why did most of the early settlers live along the Atlantic coast?
   b. Why did some of the settlers push on through the mountains?
   c. Why was so much of the land in America settled by Spain?

3. What do you know about the early settlers in the part of our country in which you live? Your teacher may want to discuss this with your class.

4. Draw pictures or model from clay a covered wagon such as our early settlers used.

5. You may want to make for your class a physical map of the United States. Study a physical map in your geography book to help you locate correctly the different land forms.

6. We speak of our country as being very large. Use the appendix to find the exact area of the United States. How does it compare with the area of Canada? Compare the population figures of the United States and Canada. Can you name any countries that are larger than the United States? Any that have more people?

7. Locate the United States by giving its latitudes and longitudes.

8. As the President flew over our country he saw plains, mountains, valleys, grasslands, and dry lands. These are the natural divisions or regions of our country. What do we call the political divisions?

9. Texas is often called the Lone Star State. Do you know your state's nickname?

10. The section of the United States you will study first is the group of Western States. If you like the plan of making lists of what you know and what you would like to know about a region, follow the plan for the Western States.

A Short Quiz

Write a sentence of your own about each of the following dates, words, and phrases. Use your dictionary or textbook to check your use of each one.

1. Pilgrims
2. Cumberland Gap
3. New Orleans
4. 1803
5. Alamo
6. Gadsden Purchase
7. Lewis and Clark
8. The Piedmont
9. Appalachian
10. Blue Ridge

Ewing Galloway (top), Pauls Photos (bottom)

The highest and the lowest spots in the United States are a contrast in scenery. Mt. Whitney towers majestically at a height of 14,498 feet; Death Valley sinks 276 feet below sea level.

Chapter 10

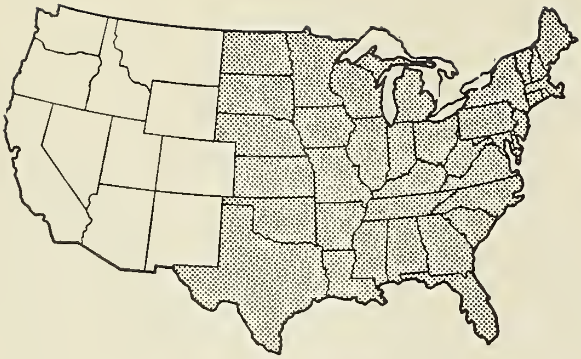
The Western States

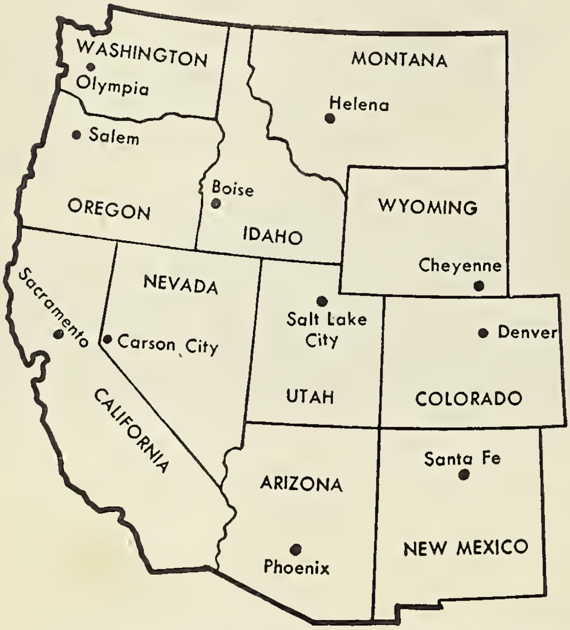
The great open spaces. Much of the western part of the United States is often spoken of as "the great open spaces." Why is this? If you look at the map of North America, you see that the western mountains extend from Canada all the way across the United States and on into Mexico.

If you look at the rainfall map of the Western States, you see why this part of our country is called the great open spaces. Much of the land is too dry for farms and too dry for forests. The air in this dry land is very clear. You can see a very great distance, and in nearly all places you can see a mountain somewhere. This is a land of great distances and few people.

Now you know why eleven western states have nearly half of the land in our country, but they have less than one-sixth of the people.

In the Prairie Provinces of Canada, you can travel for mile after mile, but the land is all the same. It is not so in most parts of the Western States. Here you may find one side of a mountain green, and covered with big trees. The





A map of location and size of the Western States helps you with place geography. Notice the name and location of the capital of each state.

other side, only a few miles away, may be so dry that it is brown and has only a few small bushes.

1. Check a rainfall map to answer:
   a. Which part of the Western States has the heaviest rainfall? the lightest?
   b. Which area is larger, the one with heavy rainfall or the one with light rainfall?
   c. How does the amount of rainfall in an area affect the work of people there?

Believe it or not. Lloyd French is a schoolboy in Ohio. Lloyd is in the fifth grade. His class is about to begin the study of the Western States. The teacher asks Lloyd to give a talk. "Your job, Lloyd," says she, "is to tell so many interesting things about the West that these boys and girls will want to visit every part of it."

After supper that evening Lloyd wonders what he is going to tell the class. His father walks in.

"What's the trouble, boy?" asks Mr. French. Lloyd tells his father about his assignment.

"Nothing to it," says Mr. French. "As you know, our airplane crew trained in New Mexico during the war. We flew planes all through the West before we went overseas. We airmen called this part of our country 'the land of the opposites.' We would see something on one flight and its opposite on another flight. My friend made a list of these opposites, or 'Believe-it-or-nots,' as he called them. Here is part of his list:

"Believe it or not, you can climb almost three miles to the top of Mount Whitney, highest mountain in the United States, and from the top look down into Death Valley, 276 feet below sea level, the lowest spot in the Americas.

"You can see big trees on the western slopes of the Sierras that are 36 feet through the trunk. In northwestern California you can see trees 350 feet tall, and you can ride through the desert in southeastern California, where there are no trees at all, only cactus and sagebrush.

"You look at Yosemite Falls, in Yosemite Park, in the Sierras east of San Francisco. These falls are higher than eleven Niagara Falls piled one on top of the other. Or you can watch water from underneath the earth as it gushes from artesian wells on the Great Plains.

"You can stand on the rim of the Grand Canyon in Arizona and look at the Colorado River one mile or more almost straight below you. Or, in the Great Valley of California, you can ride beside a stream whose banks are built up to keep the river from overflowing. The water here sometimes flows above the level of the nearby valley farms.

"You may climb the Rockies or the Sierras and live among snow fields in summer. Or you may go into the Imperial Valley, in southeastern California, and find hot weather—so hot the thermometer may read 125° or higher. Water gets so hot in the sun that you cannot bathe in it.

"You may walk through the coast forests of Oregon and Washington where 80 inches or more of rain fall each year and the trees are dripping with moisture. Or you may stop for dinner at a restaurant in Arizona that advertises 'Free meals every day it rains.'

"You may fish in hundreds of clear mountain lakes, or you may stand by the salt-covered shore of a desert lake, whose water is so bitter that no fish can live in it.

"You may bathe in the waters of the Pacific Ocean near Los Angeles, and a few hours later you may be sledding on snow-covered mountaintops, east of the city.

"You may visit a shipyard on San Francisco Bay where an oceangoing Liberty Ship was built in 4 days and 15½ hours. Or you may return to Yosemite Park to see the Grizzly Giant—a tree 3800 years old, perhaps even older.

"You may visit La Brea Rancho, near Los Angeles, and see skeletons of animals that lived in the Far West millions of years ago. Or you may go to a lion

Burton Holmes from Ewing Galloway

Automobiles pass through one of the big trees in General Grant National Park, California. In the Grand Canyon of Colorado, the river winds through the vast gorge.

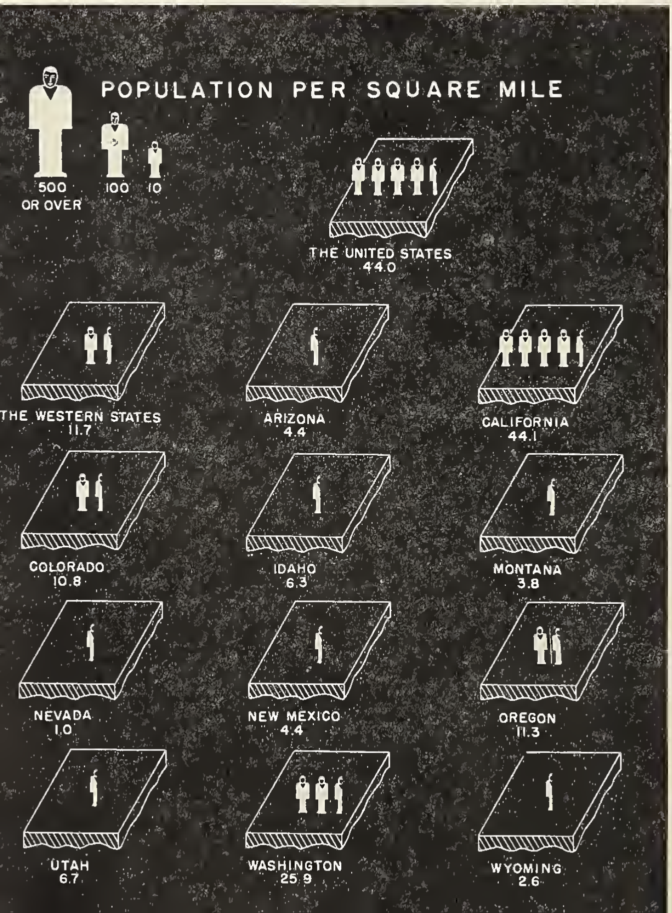
Union Pacific Railroad

farm not far away where lions are raised in about the same way that a farmer raises pigs or cattle."

At school the next day, Lloyd tells the class about the ten "Believe-it-or nots." The pupils decide to look for more "opposites" as they continue their study of the Western States.

1. Write the following list on a piece of paper. Use a map of the Western States to locate each one. Tell why each one was included in "Believe-it-or-not."
   a. Mount Whitney
   b. Death Valley
   c. Sierra Nevada Mountains
   d. Yosemite National Park
   e. Grand Canyon National Park
   f. Colorado River
   g. Coast forests of Oregon and Washington
   h. Desert area in Arizona

How does the population of the Western States compare per mile with that of the United States? Which state is the most densely populated?



Something to Do

1. Discuss the following ideas and questions with your classmates:
   a. Persons per square mile.
   b. How many persons per square mile are there in the United States? in the Western States? in your state?
   c. The Northeastern States have about 220 persons per square mile. Why do you think one part of our country is so densely populated and another part so sparsely populated?

2. Make a list of the "opposites" found in the Western States.

3. Give the best answer you can to these questions:
   a. Why does the restaurant owner in Arizona advertise "Free meals every day it rains"?
   b. Why is the water of a desert lake bitter?

4. Write the names of the eleven Western States. Learn to spell the names so that you can use them when you write about these states.

5. Locate the Western States by giving the most northern and most southern latitudes, and the most eastern and most western longitudes.

6. Add the terms "cactus," "sagebrush," and "artesian well" to your vocabulary.

A Short Quiz

Here are nine sentences about the Western States. Some of them are true, others are not true. Write the sentences, changing the false ones so that all of the statements will be true.

1. This area has nearly half of the land in our country.

2. This area has half of the people in our country.

3. There are many large trees on the eastern slopes of the Sierras.

4. You can find hot weather and see snow fields in summer in California.

5. You will find things very new and things very old.

6. Much of the West is too dry for many farms and forests.

7. The West is densely populated.

8. All parts of this area have the same climate.

9. Grand Canyon is the lowest spot in the Americas.

Black Star

A young herder guides his flock. Why is this land better suited to sheep than to cows?

Chapter 11

Sheep and the Pasturelands

Shearing sheep. It is a warm day in June. The sheep on a ranch on the Great Plains of eastern Wyoming are panting because thick coats of wool make them so hot. Soon the herder and his dogs drive the sheep into a big yard or corral. Here men catch the sheep, one by one. They take the sheep into a shed where other men, called sheep shearers, are waiting to cut off their thick coats. The sheep shearers use clippers, much like those used by a barber, only larger. The clippers are run by a gasoline engine. The engine keeps a dozen pairs going at the same time.

After a few days' work, the sheep shearers go on to the next ranch, leaving hundreds of sheep fleeces tied up in bundles. A fleece is the wool that comes from one sheep. The fleeces are stuffed into big sacks and taken to the railway station by truck. There the sacks of wool are packed into freight cars, and are started on their way to a mill that makes woolen cloth.

By selling fleeces the rancher gets money to pay for some of the many things he needs to buy. The sheep are much more comfortable in summer without their coats of wool.

New pasture for the sheep. The herder now takes his flock, or band, of sheep out on the level plain to eat grass again. The spring rains have made good grass and the sheep grow fat. Later the rains stop, the weather grows hotter, and the grass becomes parched and brown. The sheep have eaten all the grass that is near the ranch. Each day the herder must drive his sheep farther west toward the mountains in search of more grass.

There are two thousand sheep in this band. The herder follows the flock by day and camps near them while they rest at night. He has two dogs, three mules, and a canvas-covered wagon drawn by two of the mules. The wagon has a bed in it, a stove, a cupboard, and a radio phonograph. Some herders carry walkie-talkie radios.

The herder cooks his own meals. Every now and then the owner of the sheep sends out a fresh supply of food. For days the herder may see no one. Some men like this kind of life, and once they have herded sheep they will work at nothing else.

The herder's dogs. The herder could not get along without his dogs. During the day the dogs are very helpful in bringing straying sheep back to the flock. At night dogs wake the herder if wild animals come near. If a wolf, or fox, or coyote comes sneaking around, he may get a bullet instead of a sheep. In fact, ranch owners sometimes hire men to hunt coyotes, wolves, and bobcats. These animals do harm. They catch and eat lambs and straying sheep.

Each day the herder and his dogs guide the band a little farther west. One morning at sunrise, the herder sees a wavy line of white across the sky far in the distance. It is the sun shining on the snow that lies on the tops of the Rocky Mountains. For two weeks the herder, his dogs, and the sheep travel toward the mountains. Each day, as they move westward, the mountains look higher. At last they are like a great wall standing above the plain. On the mountaintops, there is snow; below the snow are bare rocks and grass; and farther down, evergreen trees cover the sides of the mountains.

Weather in the mountains. The President on his flight west found cooler weather several thousand feet up than he found at the Washington airport. And men who fly 5 miles or more above the earth must wear clothing heated by electricity. Persons who climb high mountains find the weather much colder near the top than at the bottom. They may start out without coats or sweaters, but by the time they reach the mountaintop, they may need both. Snow falls on some of the higher peaks of the Rocky Mountains even in midsummer.

The herder often sees clouds around the tops of the mountains while the sky over his head is cloudless. He can see rain or snow falling on the mountain some miles away, when no rain is falling where he is.

All air has some water, moisture, in the form of vapor. The little cloud from a teakettle is vapor that you can see because the cooler air has condensed it into tiny drops. When the little cloud melts away into the air, it is still vapor, although you cannot see it. If you hold a cold plate near the spout of a boiling teakettle, the plate will cool the steam. Water will form and trickle down the plate. Try it sometime, but don't crack the plate.

As air blows up a mountainside, it is cooled, and the moisture in the air may turn into small drops that make clouds, or the drops may get larger and fall as rain. If the moisture freezes, it may fall as snow, sleet, or hail.

1. Why do you think there are trees and green grass on the mountain slopes when the grass on the plain is parched and brown?

Climbing mountain slopes. The herder and his flock of sheep go up the mountains. They follow a stream that comes splashing and foaming down a narrow valley. Trees grow on the mountainsides. Soon the shepherd must leave his wagon, for it cannot be taken up the narrow, rough trail of the mountain valley. The mules, however, can walk along the trail. So the herder puts his tent, stove, mattress, blankets, cooking utensils, food, radio, and talking machine into packs. He balances the packs across the backs of the mules. The herder may now have a helper whose job it is to move camp.

For a few hours each day, herder, helper, mules, dogs, and sheep follow the narrow valley. The higher they go, the larger the trees become. Finally, there is a forest of tall evergreen trees. More than twice as much rain falls here as at the ranch on the plains to the eastward. The heavier rainfall explains why the mountain slopes have trees.

The high pastures. The sheep climb several thousand feet. They nibble grass as they go. When the herder finds large, open, grassy places among the trees, he stays a day or two, or maybe a week or more. Then they climb again to higher grasslands. On these very high mountain slopes, the nights are always cool and frosts come late in spring and early in autumn. Here the weather is too cold and windy for trees. But the warm sun of summer days makes good grass. The sheep have come a long way up the mountain slope—they are almost two miles above sea level.

1. Find this two-mile high land on your map. What colors are used to show land that is more than 5,000 feet above sea level?

Alfalfa for sheep. There are many bands of sheep every summer on the high pastures in the mountains in the western part of our country. Some of the

"Wide, open spaces" describes sheep ranching and fits this general view of a Wyoming sheep ranch.

Philip Gendreau

sheep belong to ranchers who own valley land near streams that flow out from the mountains. These lucky sheep have alfalfa hay to eat during the winter because the water from the streams is used to irrigate the land in summer. As you ride across the Great Plains, you come to a place where you can look down into one of these river valleys. The land where you stand may be brown and dry with August heat. But the valley is dark green with a fresh growth of irrigated alfalfa. There are also big stacks of alfalfa hay scattered about the valleys.

This is a fine place for sheep to spend the winter. They eat the alfalfa hay until new grass grows again in the spring. In valleys in every western state there are fields of alfalfa that have been irrigated. Much of the water in the valley streams comes from the melting snow in the mountains. Some comes as rain.

Dried grass for sheep. Some sheep in the Western States are not so lucky. They belong to ranchers who have no irrigated land and no stacks of alfalfa. For winter feed these sheep must eat the dried grass that has been left standing in summer. If snow falls and forms too hard a crust, the sheep may not be able to dig through to the grass. Then the rancher must buy hay and other feeds for his sheep, and he must get it in a hurry or they will starve.

1. If you had a sheep ranch in the West, would you want it to be near a snow-covered mountain? Give the reason for your answer.

Sheep from Canada to Mexico. Herders with their big flocks of sheep may be found every summer on the plains and mountains of the Western States. You will find them in the Rocky Mountain states—Montana, Wyoming, and Colorado; in the southwestern states—New Mexico and Arizona; in the Pacific coast states—California, Oregon, and Washington; and in the intermontane states—Idaho, Utah, and Nevada. You can find the herder with his band of sheep in every one of the eleven states that are nearest the Pacific Ocean.

1. Locate on a map each of the groups of states where you will find sheep every summer.
2. What does the term "intermontane" mean?

We visit a sheep herder. A few years ago, we visited a sheep owner on the western side of the Rocky Mountains in northwestern Colorado. At seven o'clock on an August morning the sheep were eating breakfast in a flowery pasture on the rounded top of a mountain, 9,600 feet above the sea. At ten o'clock they went to bed for their midday nap under a grove of spruce trees in a little valley 400 feet below the top of the mountain.

While the sheep were sleeping, the herder and a boy from Chicago, who was the herder's helper during vacation, rested in their tent beside a nearby spring. They knew that the sheep would sleep until 4 o'clock. They knew that the coyote, the sheep's enemy, sleeps in the middle of the day, too.

Trees, grasses, bushes. What a difference we found in the forest as we walked down the western slope of the Rocky Mountains! At 9,000 feet above sea level, where there was a great deal of rainfall, the trees were tall and close together. As we went down to 8,000 feet, where there was less rainfall, the forest became much thinner. At 7,000 feet there were only a few small trees. Still lower on the mountain slope, at 6,000 feet, there were no trees at all. There were just a few small bushes, because only about 6 inches of rain falls at that place in a year. This is not enough for trees or even for good grass. But the sheep like to nibble the bushes.

Winter on dry pastures. Ranchers call these lower, drier lands, desert pastures. The sheep can go far out on these bushy deserts when the snow falls. They nibble the bushes and eat the snow for water. In summer the sheep cannot live on some of these dry lands. The animals must drink at least every other day. And it may take several days to walk to the nearest stream or spring.

When summer comes, the sheep start back on their long journey up the mountain slopes to the cool, high pastures.

1. What is a desert pasture?

Pasture country. Some parts of this and of the great open spaces are too dry for much use—they are just desert. Sheep and cattle can find something to eat on most of it, and so most of it is pasture land. In some places herds of cattle are kept instead of flocks of sheep. Bands of sheep and herds of cattle may be found all the way from Canada to Mexico, from the Pacific Ocean to the eastern edge of the eleven Western States.

In every one of these states there are irrigated valleys where the farmers grow alfalfa and make hay to feed the sheep and cattle when there is no pasture on which they can graze.

The ranchers sell cattle and lambs—spring lambs, very tender and good to eat. They sell some sheep for meat. They sell wool. With the money they buy what they need—perhaps another walkie-talkie for a new herder, perhaps an automobile for the family.

1. Why is most of the land of the great open spaces used for pasture instead of farms?

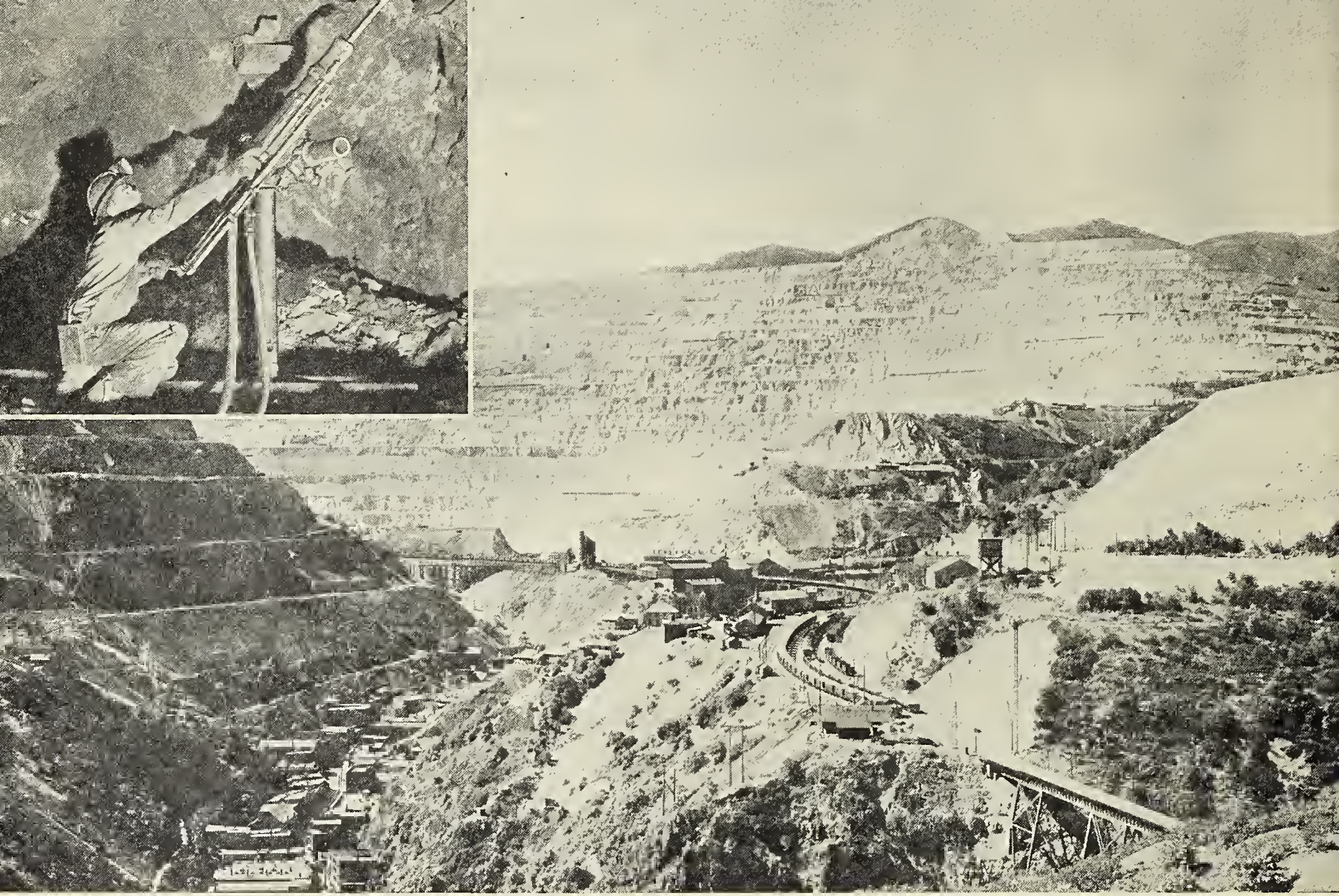
Something to Do

1. Find in Chapter 11 a sentence that tells why:
   a. Trees are larger on higher slopes than on lower slopes.
   b. Rain may be falling on a mountainside at the same time that the valley may be having clear weather.
   c. The shepherd must leave his wagon in the valley.
   d. There is grass, but there are no trees on the very high mountain slopes, and on some lower slopes.
   e. Some of the sheep in the valley lands have alfalfa hay for winter feed.
2. As you read about British Columbia, you learned of the forests on the western slopes of the mountains and the dry land on the eastern side of the mountains. Think of the reason for this and then write your answer to this question: Why do the plains of the Western States have a light rainfall?
3. Make a drawing to show a western slope of the Rocky Mountains. Read again the paragraph on "Trees, grasses, bushes" in Chapter 11 to tell you what sizes and numbers of trees to draw in your picture. Write a few sentences to explain your drawing.
4. Discuss these questions:
   a. Why are the western plains used for grazing lands?
   b. What do you think this region was like before ranchers came?
   c. How are some of the ranchers able to supply alfalfa hay for winter feed?
   d. Why is there danger of some sheep starving in winter?
   e. To whom do you think the ranchers sell cattle, sheep, and lambs?

A Short Quiz

Write the list of words below. With each word write another word that means the same thing. Check with your dictionary for synonyms, that is, words that have the same meanings.

1. corral
2. fleece
3. flock
4. shepherd
5. coyote
6. ranch
7. slope
8. vapor
9. condense
10. level



Anaconda Copper Mining Company (inset), Gillham Advertising Agency

There is great wealth in the copper mines of the Western States. Utah has the world's largest open-cut copper mine, and Arizona has a great hill of copper ore.

Chapter 12

The West — Treasure Chest of Minerals

Minerals. Anything in the earth that is not a plant or an animal is a mineral. Gold is a mineral. Coal is a mineral. Water is a mineral. If you pick up a stone, some sand, or some earth, you have taken mineral. We usually get the minerals we use by mining for them.

A piece of rock you hold in your hand might be compared to a piece of cake. Cakes are made of flour, sugar, salt, shortening, and other ingredients. An ingredient is one of the parts of a mixture. Rocks are made of ingredients called minerals. If the rock contains enough very useful minerals to pay for the job of getting it out, the rock is called an ore.

The mineral in the ore may be a tiny speck, or a big piece. Or it may be a wavy line. Some coal seams are thicker than a man is tall.

The United States leads the world in the production of iron, coal, petroleum, copper, lead, zinc, salt, and phosphorus. It is second in silver, and third in gold. There are other minerals in which we are among the leaders, but the minerals named are the most useful of all.

The tips of matches usually contain some phosphorus. It is an element that bursts into flame in the air.

1. Can you name one use for each of the minerals mentioned above?

Gold! On January 19, 1848 there was big news from California. Gold had been found. On that day James W. Marshall, of New Jersey, was digging a mill race for a sawmill on the bank of the American River in California. A mill race is a small canal to carry a stream of water to turn a mill wheel.

As Marshall threw out a shovelful of sand he saw something yellow—flakes of gold glistened in the sun! Marshall stopped digging and began to gather gold.

Newspapers everywhere picked up the gold story. They spread it in big type on the front pages, and great crowds of people started for California. This was the famous "Gold Rush."

Men gave up their jobs in the Eastern States and Europe to "get rich quick," as they hoped, in California. They came on horseback and in covered wagons, across the wide, unsettled West. They came by ship around Cape Horn.

They walked across the Isthmus of Panama and then sailed along the coast to San Francisco. Many died of disease on the way. Some got lost and starved. Some were killed in fights with the Indians. However, at least eighty thousand gold seekers reached California during the year 1849. They were the "forty-niners."

For miles and miles the American River had gold in its sands. Where did the gold come from? It came from far back in the Sierra Nevada Mountains, where there was a thick layer of rock that contained particles of gold.

For ages Nature had been trying to break up that rock and every other rock in that mountain and in every other mountain.

Nature works in these ways:

1. Rain water in these rocks had frozen and split them open.
2. The rocks had heated quickly under a hot sun, and cooled quickly after sunset or a sudden shower. That made them crack and peel.
3. Growing plants had pushed their roots into cracks of the rocks. As the plants grew, the roots widened the cracks and split the rocks.
4. Water dissolved parts of rocks and left the remaining parts to crumble into a mass of earth, sand, or gravel with particles of gold in it.

All these and other forces caused the rocks with gold in them to crumble. We call it weathering. The rain waters carried parts of the weathered mass into streams.

What James Marshall saw in the mill race were specks of gold that had once been in the mountain rock. The rock had weathered, and some of the earth and gold had been washed into the stream. The water had carried and scattered this material along the stream bed for miles and miles.

The forty-niners followed the mountain streams up the Sierra. They panned for gold.

The mother lode. Far back in the mountains was the layer of rock with the gold ore from which running water had carried the yellow flakes in the Marshall mill race. Men followed the stream until they found this layer of rock, or mother lode, as it was called. They dug down into the mother lode and got out hard rock—gold ore. Now some gold mines are more than a mile deep.

Some years ago the United States Government cut the amount of gold required to make a dollar to almost half. Times were hard then and jobs were scarce, so men by the thousands returned to the old job of the forty-niners—panning for gold.

If he worked all day and had great luck, the pan miner might find as much as two dollars' worth of gold—rarely more. The forty-niners had really cleaned the streams.

The prospector. Since the time of the forty-niners, thousands of prospectors have spent weeks, months, even years, hunting metal in the mountains of the Western States. If you go there you can see, here and there, a hole in the hillside where some man dug out a cartload or two of earth and rock, found nothing and quit. You can see big holes where men have taken out all the metal. There is no more metal now and no men are there. There are old roads that are no longer used, old ore-crushing mills that have tumbled to pieces, old villages where the houses are falling down.

Here and there is a great mine. It has a power plant with a big engine to run hoisting machinery and pumps to bring water out of the mine and to take air into the mine. Nearby is a town where hundreds of people live who work in the mine. There is a railroad that hauls the ore away and brings a thousand different things to the stores in the miners' town. Most of these big mines yield gold, or silver, or copper. But in the rocky valleys where the miners live, almost nothing useful grows or is made.

Copper. Copper is the most important metal in the Western States. We may say that it is almost a magic metal. Copper does not rust like iron. It can be pounded into thin sheets. It can be mixed with zinc to make brass. Copper can be drawn into fine wire. Copper wire carries electric current nicely. Copper is cheap, too—at least cheap enough for such uses as electric wires in a house, and gutters to carry rain water off a roof. Every Flying Fortress built during World War II had in it three thousand pounds of copper. Every battleship had one thousand tons of copper.

The United States is lucky to have plenty of copper. In Arizona is a mountain that once was more than a mile high. It is now less than a mile high. Big steam shovels bit off the top of the mountain and laid bare a great hill of copper ore. The mass of ore is one mile long, a mile wide, and 700 feet thick.

One man said it contains three billion pounds of copper. But he was a low guesser. Another man said the mine contained 6½ billion pounds of copper. How much copper is in the mine nobody knows. And this is only one of the copper mines in Arizona. There are dozens of others scattered through the states of Arizona, Utah, Montana, Nevada, and New Mexico. Some of the mines have great amounts of ore waiting for the steam shovel or dynamite.

1. Explain why we say, "Copper is an almost magic metal."

Coal. The world's richest coal fields are in the Appalachian Highlands, chiefly in Pennsylvania, West Virginia, and Kentucky. But the Western States have at least three times as much coal as have the states crossed by the Appalachians. Most of the western coal lies in the Great Plains. East of the Rocky Mountains it is not of high quality, but we know how to use it. There are also some small coal deposits in the Rocky Mountain region. Coal is now being mined in six western states. Wyoming, Colorado, Utah, and Montana lead, and there is some coal mined in Washington State and New Mexico. Coal is a great resource for the future.

Something to Do

1. In the following lists the four leading states in the production of minerals are given, according to the kind of mineral produced. The figures in parentheses are the percentages produced. For example, California produces about 40% of all the gold mined in the United States. Study the list carefully and write the answers to the questions following it.

Gold: California (40%); South Dakota (15%); Colorado (10%); Nevada (10%).
Silver: Idaho (30%); Utah (25%); Montana (20%); Colorado (15%).
Copper: Arizona (30%); Utah (25%); Montana (10%); Nevada (5%).
Lead: Missouri (35%); Idaho (20%); Utah (15%); Oklahoma (5%).
Zinc: Oklahoma (25%); New Jersey (15%); Idaho (10%); Kansas (10%).

a. Which of the states that rank first in producing gold, silver, copper, lead, and zinc are Western States?
b. How many Western States rank second? fourth?
c. Count the number of states listed.
d. Count the number of Western States listed.
e. Do you think the title of this chapter is a good one? Why?

2. Write a paragraph telling how Nature works to put particles of gold into streams.

3. Look for samples of rock to show how Nature weathers them. If you live in a place where there are no rocks in your yard or fields, you may want to go to a museum to study weathering of rocks.

4. Use the pictures in this chapter on mining to help you write a story about the different ways gold is mined.

5. Give as many reasons as you can for this statement: "Almost nothing useful grows or is made in the valleys where the miners live."

Gold! Panning is one way of separating the bits of gold from the sand and gravel of a stream. The heavy metal settles in the pan.

6. Prepare a talk to give to your class about the value of our western mountains.

7. Look for newspaper clippings about mining to add to your scrapbook.

8. Write your own definition for each of these words and phrases; then check your meanings with a dictionary. If you have any errors, correct them.

mineral
ore
mother lode
coal seam
mill race
weathering
element
ingredient

A Short Quiz

Write the numbers from 1 to 8 on your paper. Write the word or phrase that fits the description of each of the following:

1. stone mixed with metal ____
2. washing gold by hand ____
3. man who hunts for precious metals ____
4. a "magic metal" ____
5. an element used in tips of matches ____
6. "forty-niners" ____
7. a cause of rocks crumbling ____
8. layer of rock with gold ore ____

Philip Gendreau

A tractor pulls a huge, 600-year-old fir log from a forest in Washington.

Chapter 13

Mountains, Forests, and Fish in the Western States

The oldest and largest living trees. William Cullen Bryant was an American poet. His poem, "A Forest Hymn," has the line, "The groves were God's first temples." A grove is a group of trees standing together. Perhaps the poet was writing about the groves of big trees along the western slopes of the Sierra Nevada Mountains. Here are the General Sherman tree, largest of all living trees; the General Grant tree, second largest; and the Wawona tunnel tree. This giant sequoia has a roadway cut into it wide enough and high enough for an automobile to pass through. Sherman is 36½ feet in diameter; that is, from one side through the center to the other side.

One of the largest groves of these big trees is called the "Giant Forest." It is in Sequoia National Park, California. This park, like Mt. McKinley National Park, is owned by our Government. Anybody from anywhere may visit the park by paying a small fee for his automobile. Here you may see some of the largest and oldest living trees in the world. If you want to see the tallest living things in the world, you must find the redwood trees. They grow near the

Pacific coast in northern California and Oregon. Among these redwoods stands one tree that is 364 feet high and at least 2,000 years old.

Men and women who love trees have given money to buy groves of redwood, and more money is needed to save some very fine trees. One grove of giant trees is in memory of a son of California who gave his life for his country and state in World War I. Another grove is for boys and girls who died when they were very young. Their parents, other relatives, and friends wish to remember the children in this beautiful way. "The children did not die. They are growing up with the redwoods."

A "bird's-eye" view. Seeing our country as a bird does when he flies high would be a "bird's-eye" view. If you were able to get a bird's-eye view of North America, you would see that the continent has forests along the Atlantic coast, very few trees in the central part west of the Mississippi, and long strips of forest on the mountain ranges in the western part. These mountain ranges extend almost from north to south. But if you looked north you would see that the forests of the east and the forests of the west are joined by a great forest that stretches from ocean to ocean.

Do you wonder why there are forests on the mountains near the ocean?

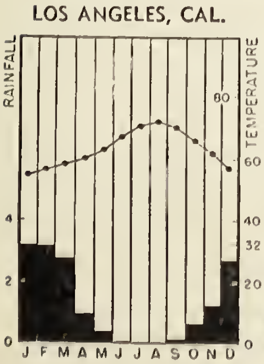
1. Compare the diameter of the General Sherman sequoia with the width of your classroom.
2. Use a globe or a map to locate the tall mountain ranges in North America. In what general direction do they run? Trace with your finger the Great Northern Forest in our continent. In what direction does it stretch?

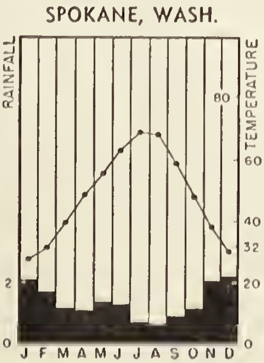
Inches of rainfall. The mountains near Olympia in western Washington have as much as 140 inches of rain a year. The mountains back of Seattle, Washington, and Portland, Oregon, have up to 100 inches of rain a year. These mountains are thick with forests on the western slopes.

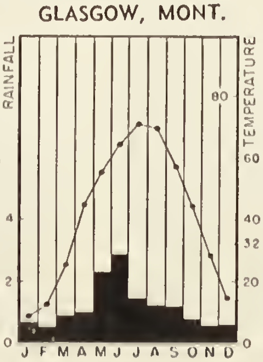
As one goes south, the rainfall grows less. In southern California the mountains may have 40 inches of rain a year, plenty for trees. But the lowlands near the coast get along with about 15 inches and have very few trees. Beyond the mountains to the eastward, rainfall may be only two to four inches. For even that little rain the newspapers all talk about the "wet weather."

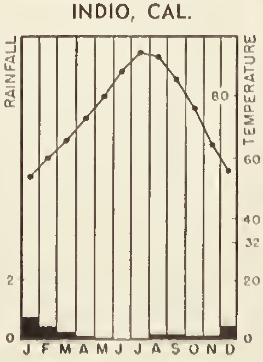
1. Study a rainfall map to help you tell:
   a. About how many inches of rain are needed for mountains to have thick forests.

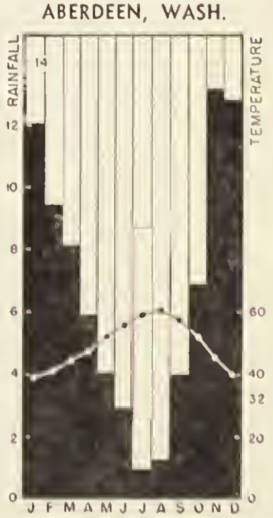
What is the average rainfall in each of these areas for the month of May? Compare temperatures for July. Which areas have fairly even temperatures during the year?











b. About how many inches of rain fall in a year in places where there are few trees, where there is short grass, such as in ranch lands.

Our biggest lumber pile. The forests of the West contain much more than half of all the timber in the United States. Timber is living trees that are large enough, straight enough, and sound enough to make good lumber. Almost half of all the lumber we use in this country is cut from these forests near the Pacific. Oregon, Washington, and California are among our leading lumber producing states. There are the big trees and the redwoods of California, and the mountains in Washington and Oregon have the Douglas fir, pine, hemlock, and Sitka spruce. You read about these trees in British Columbia.

It is heavy work to move a log that is 20 or 30 feet long and as thick as a man is tall. The loggers often have to build railroads in the forest just to get out these logs from trees that are a thousand years old.

National forests. About one-third of all tree-covered land in the United States is national forest. Most of the national forests are in the West. National forests are part of the public domain. The public domain is land that belongs to the Government, which means to all of us. We, the people, own the land and the trees in the national forests.

Men who study forests and forest trees, and who take care of them, are called foresters. Many foresters work for the Government. They decide what trees shall be cut in the national forests and how many trees shall be cut. They raise seedlings, young trees—millions of them. They plant the seedlings where forests have been burned, and look after the little trees until they grow big enough to take care of themselves. Foresters say to sheepmen, "You may graze sheep in our forests, but just so many sheep and no more. The sheep may graze only in certain places where they will not harm young trees."

The foresters have tall towers on the tops of mountains in the forest. From the tops of the towers they watch for forest fires. When they see smoke they call for help by telephone or radio. They tell where the fire is. Fire fighters come by trucks or airplanes, and the battle with the flames is on. Sometimes there are dreadful fires in these mountain forests.

The foresters also help people who own forest land. They teach these people how to grow trees on their own land and how to take care of the trees. Some owners learn because they are good businessmen and wish to sell trees to make money.

Perhaps you may say that you live in a city and have no use for trees. But wait! City people need trees in several ways. We all use lumber in some way, do we not? And we all use paper. Zurich, a city in Switzerland, pays most of its taxes with money the city gets from Sihwald, the city forest. Taxes for the city of Zurich are earned by the trees. The people pay very little of the city taxes. In Europe many towns and cities own forests.

Our national forests will make a lot of money for us some day, when the trees get bigger and the other forests have been used.

Forests are useful in many other ways than just in making wood. The leaves of the forest trees fall off, lie on the ground, and catch the raindrops. This mat of leaves holds the water until the moisture sinks into the earth.

Forest soil is much like a sponge because it is partly made of old leaves. This soil holds rain water and lets it sink into the earth slowly to feed springs and streams. A river that flows through thickly wooded country seldom goes dry and seldom has a bad flood. Forests, as we say, conserve the water supply. Every town and city needs a water supply.

The farmers in the Western States want to have forests on the mountains so that they may have more water for irrigation. Forests also are a refuge, a place of safety, for birds and animals, and a place where plants can be undisturbed. Most people like to get into the cool shade and away from the hurry and bustle of their daily living. They want to camp in the forests, to hunt for plants or animals, to fish in the streams, and to picnic among the trees.

No boy or girl wants to see his beautiful country, the United States, as bare of tree cover as are parts of China. That may happen unless we take better care of our trees and stop forest fires. More than thirty million acres of forest are burned in the United States each year. This area is three-fourths as large as the six New England States.

When our soldiers marched through Germany, they looked at each other in wonder. Said one "G. I. Joe" to his buddy, "Did you ever see such forests in your life? These people love trees. If they can have forests here, so can we at home. Why sing, 'I love thy rocks and rills, thy woods and templed hills' and then let the woods burn? Here is one 'Joe' who has learned his lesson. When I get home, I shall work for better forests."

1. Discuss with your classmates:
   a. How trees protect birds and animals
   b. How forests conserve the water supply and soil

Philip Gendreau

Tuna fisheries off the California coast, especially those near San Diego, are very important. How is tuna fish marketed?

National parks. There are many national forests and also national parks in the Western States. The parks are mostly wild places that are both interesting and beautiful. Our Government owns 31 of these parks and 16 of them are in the Western States. In these wild park lands you may see deer, buffaloes, beavers, and many other animals in their own homes. No one is allowed to shoot or disturb the animals in the parks.

Nearly everyone likes to watch the bears in Yellowstone Park. Sometimes the bears get too much interested in tourists' cars. How the bears do like bacon! They can smell bacon in a car and they have scratched many a car and broken windows and torn off doors to get it. Bears are very strong animals.

Fish. The people of the West catch about half of all the fish we eat or sell to other countries. The people of California catch one pound out of every three pounds of fish taken in the United States and Alaska. Fishing boats go out from San Diego, Los Angeles, and San Francisco in California; from Portland, Oregon; and from Seattle, Washington.

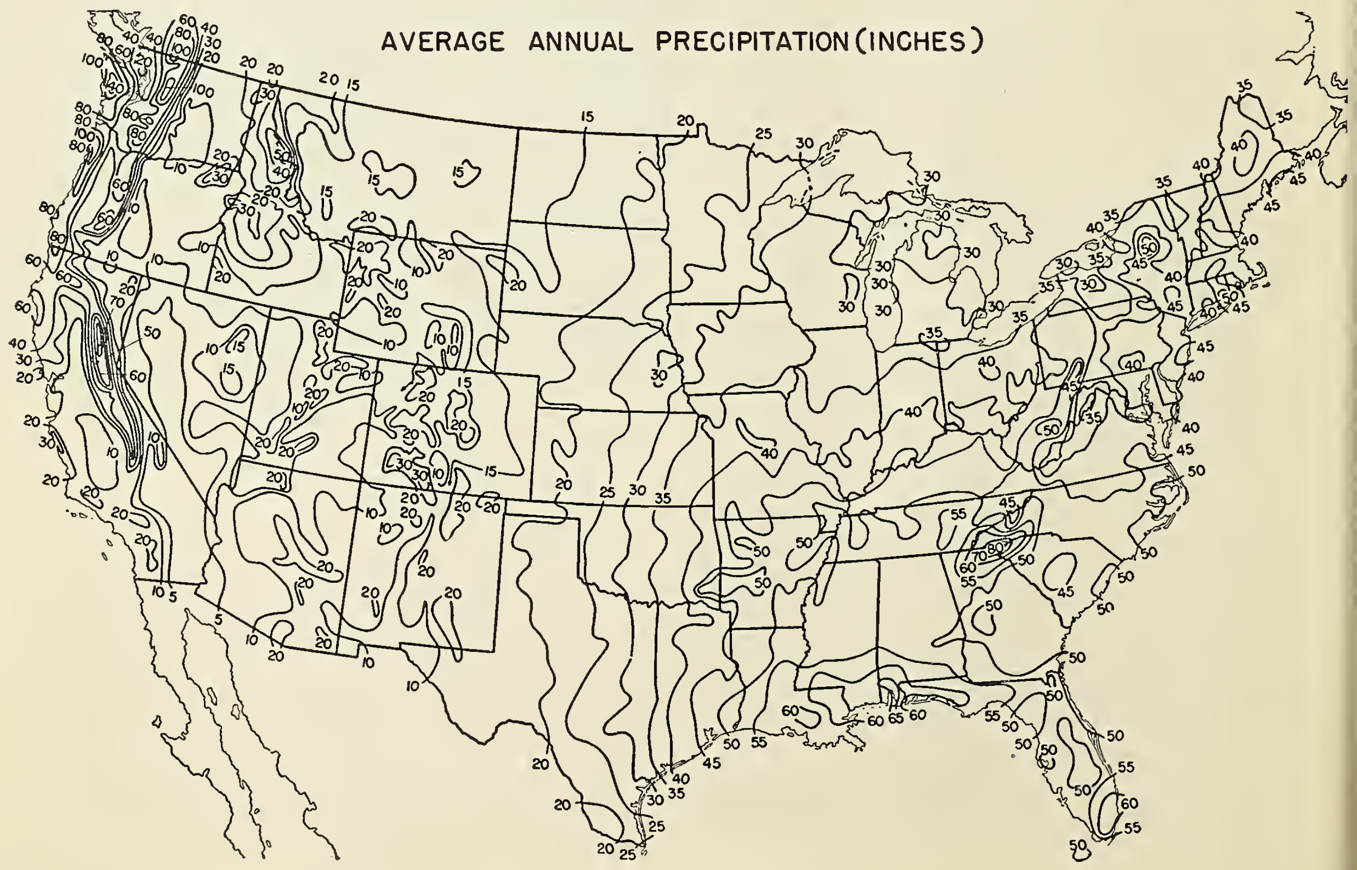
The word fish, as we use it here, includes shellfish—crabs, lobsters, oysters, shrimps, abalone. These are really not fish at all. They are water animals with shells, but they are sold in the fish market.

Think of sardines when you think of fish on the Pacific coast, not of salmon. Of course millions of salmon are caught in California, Washington, and Oregon. But three out of every four pounds of fish taken along the Pacific coast of our country are sardines.

These small fish travel in big schools. On dark nights the school gives off a

This map shows how many inches of rain falls in different parts of the United States. How much rainfall has the area in which you live? the southern tip of Texas? different parts of California?

U.S. Weather Bureau



light as it swims in the water. The light shows the fishermen where the fish are. A circle or ring net is drawn about the school and the sardines are taken by the millions.

Many a boatload of sardines has been caught within sight of the fish cannery on shore. At the cannery the fish are cleaned, cooked, and sealed in tins along with olive oil, mustard, or some other tasty sauce.

Tuna stands second in number of pounds of fish caught along the Pacific coast. Some tuna fish weigh as much as a thousand pounds, and whole schools weigh over two hundred pounds each. When a school of tuna is seen, the fish are coaxed to the fishing boats by live bait. Some are caught by use of a heavy, short rod and line. It is thrilling work to get a five hundred pound fish on your line. Most of the tuna is canned. You may have bought some under the pleasant sounding name, "Chicken of the Sea."

Nearly all the canned mackerel sold in the United States comes from canneries on the Pacific coast. These states also catch and sell crabs. Some are 9 inches or more across the back. Shrimps, oysters, and millions of abalone are caught and canned. The abalone is a sea snail. It lives in a shell. The flesh is good food. The shell is used for making buttons and low priced jewelry.

1. Give the chief reasons for the fact that the West ranks high in our country's fishing industry.

Something to Do

1. Study the map, pictures, and appendix to learn the location of our national parks and forests. Choose one of the parks to read about in an encyclopedia or other reference.

2. Look for pictures about our national forests and parks. Put them in your scrapbook or post them on the classroom bulletin board.

3. Make a list of five kinds of trees that grow well in the forests of the Western States. Can you name a use for the wood from each kind?

4. Make a drawing to show the mountains and forests in North America. Read again the part of this chapter that tells about mountains and forests. Write on your drawing these names:
   a. the mountain system on the eastern side of our continent
   b. the long mountain system that extends from Canada to Mexico
   c. the mountains that lie mostly in California
   d. the forest in the north that reaches from ocean to ocean

5. Keep these facts in mind to help you answer the questions below. There are two tall mountain ranges and many lower ones running north to south. Winds from the ocean bring water vapor.
   a. What happens when the winds blow in from the Pacific Ocean and up the western sides of the mountains?
   b. What effect do these winds have on the trees on the western slopes?
   c. What takes place when the winds cross the ranges and start down into the valley beyond?
   d. What effect does this have on trees on these eastern slopes?
   e. What happens to the amount of rainfall as the winds blow farther and farther from the sea?

6. Write a short story telling why we could call the ocean "the mother of forests."

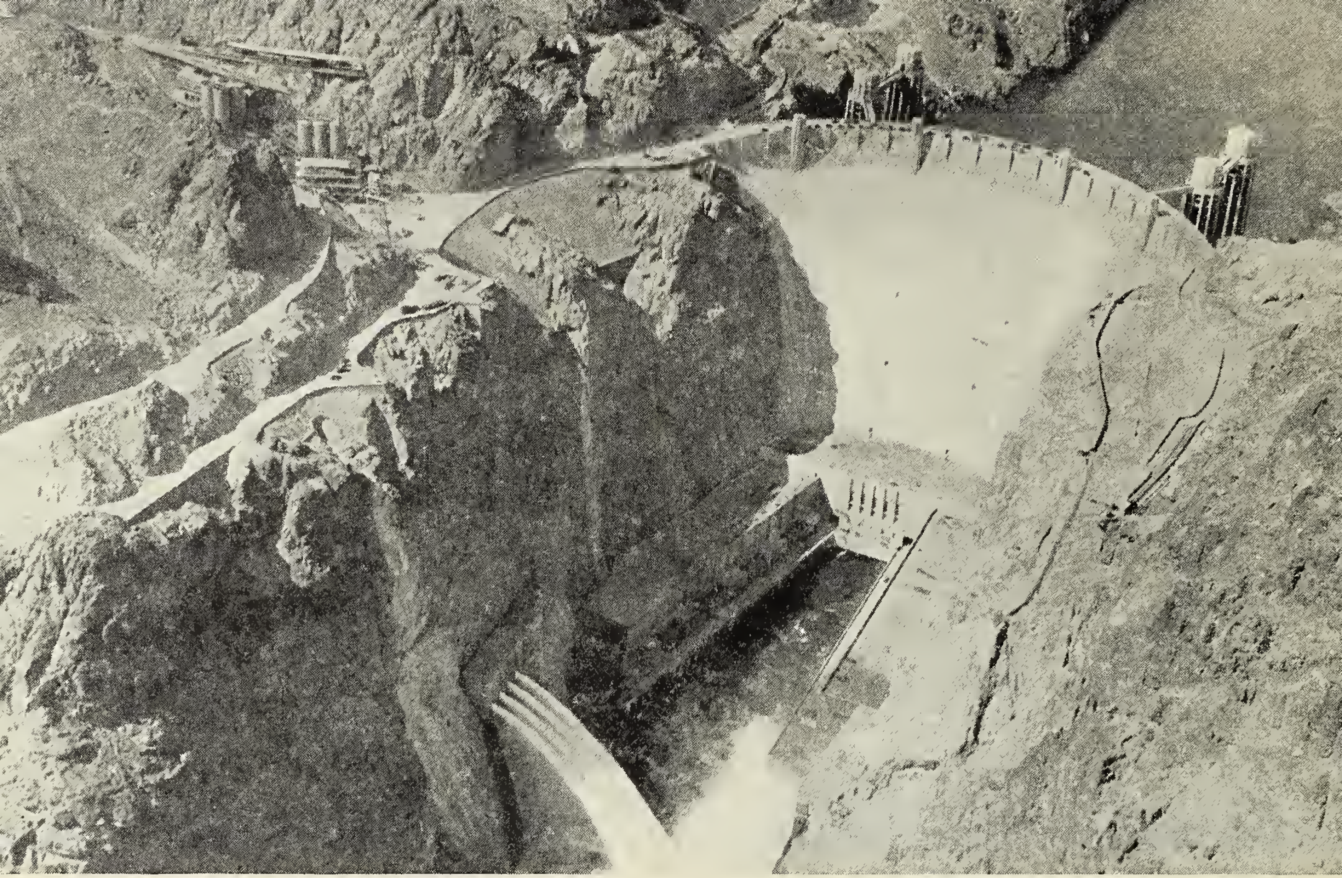
7. List as many reasons as you can to show that forests should be conserved.

8. Make up a list of five questions to ask a classmate about fishing in the western part of our country.

A Short Quiz

Use each of the following words and phrases in a sentence of your own. Be sure the sentence tells the meaning of the word or phrase.

1. grove
2. sequoias
3. foresters
4. timber
5. public domain
6. seedlings
7. conservation
8. shellfish
9. cannery
10. inches of rain



Transcontinental & Western Airlines

Hoover Dam, 726 feet high, tames the mighty Colorado. This is considered a great engineering achievement. Electric current goes from here to Los Angeles.

Chapter 14

Valleys in the Colorado River Basin

Valleys big and little. Look again at your map of the Western States and you will see that the West is mostly a land of mountains and plateaus.

This big highland, like most other mountain lands, has many lower places called valleys. Valleys are very important to people, especially if they live in a land of little rain, and you remember that a large part of the Western States is a land of little rain. Valleys are very important here because their land is easiest to irrigate.

There are many of these valleys in the Western States—hundreds of them, big and little. We cannot study all the valleys, but we shall study six of the larger ones. These will be samples. When you understand these six, you will understand the others, too. We shall study about the Salt River Valley, Imperial Valley, Valley of Southern California, the Great Valley of California, the Willamette-Puget Sound Valley, and an Inland Empire or the Valley of the Columbia, which lies east of the Cascade Mountains.

1. Ask your teacher to help you locate each of the six valleys you will study. Learn to write their names.

Big dams. The Salt River is in Arizona. The river is not salty. It rises in the eastern part of the state in mountains more than two miles above the level of the sea. The rain on the mountains may be as much as 40 inches a year. But lower down, as at Phoenix, the rainfall is often only 6 inches and, at Yuma, only 3 inches a year.

"Oh, look! Mother," said a little girl one summer day, "the river is wet!" What did the child mean? Are not all rivers wet? No, not all the time.

Sometimes the bed of Salt River, near the place where the little girl lives, is as dry as a dusty road. When a hard rain comes far back in the mountains, the river becomes a roaring flood. It would drown you if you tried to cross. It was after such a distant rain that the child said, "The river is wet." It was too bad that all that good water ran away to the sea. But that is the way desert streams behave.

As the Salt River flows through the mountains on the way to Phoenix, Arizona, its valley, in places, becomes narrow. The mountainsides rise almost straight from the water's edge. Here the United States Government has built dams—the Roosevelt Dam is the oldest and best known of these dams.

The flood waters of the river pile up behind the dams and form lakes—man-made lakes. Along the Salt River a chain of these lakes stretches for 60 miles. There the water waits quietly, ready for any job man has for it to do.

1. Trace the Salt River in Arizona from its source, and tell into what river its waters flow.
2. How many reasons can you think of for building dams?

Valley weather. The weather in the neighborhood of Phoenix is dry. The long summers, from April to November, have several hot spells when the temperature may reach 100° or higher for days at a time. The people say the land is desert and no one tries to farm unless he can irrigate.

The winters are mild. Frosty weather arrives late in the year and leaves early in the new year.

Some years there is no weather cold enough to freeze water. Freezing weather kills some plants and stops all plants from growing. And this part of southern Arizona, along with a bit of nearby California, has more sunny days than any other part of the United States.

You now have four weather facts. What are they and how do they help the valley people?

1. Light rain: Not enough to soak much plant food from the soil of the valley. Therefore, much of the soil is rich.
2. Most of the year without frost: Plants can grow almost all year round.
3. More sunny days than anywhere else in our country: Sunlight helps plants to grow quickly.
4. Enough water to irrigate thousands of acres: Water runs down from the dams, and men make canals and ditches to lead the water to the fields.

1. Read again the four weather facts and the way each helps the people in the Salt River Valley. Keep the facts in mind as you read about the crops and cities in this valley.

Valley crops. Good crop weather in the southern Arizona valleys, plus water when the farmer wants it, have helped Arizona to rank high among the states in producing lettuce, cantaloupes, grapefruit, and oranges. These valleys also grow many other early vegetables, and also cotton and alfalfa. The alfalfa fattens cattle and sheep from the mountain pastures and some of it feeds dairy cows. Their milk goes to creameries and the butter goes to other parts of our country.

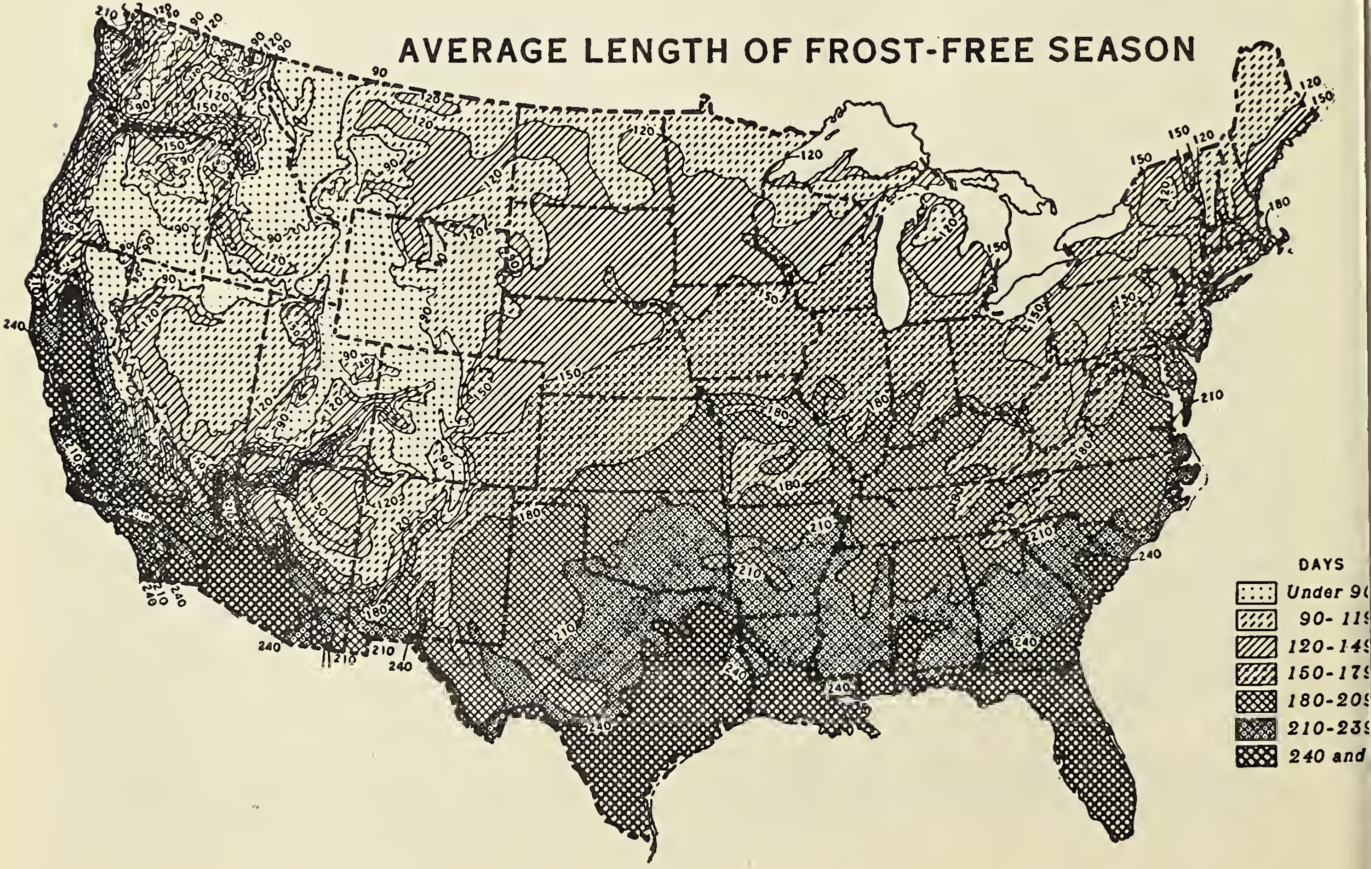
For many years the irrigated lands in this part of Arizona were known as the Salt River Valley. Nowadays we use the more beautiful name—the Valley of the Sun.

Why cities grow. This Valley of the Sun has two interesting cities. But what is a city? A place where a few families live near each other in a country neighborhood is called a hamlet. As the hamlet grows, it usually becomes a village, then a town, then, as more people come to live there, we call it a city. The United States Census Bureau calls it a city if there are more than 2,500 persons. If less than that, the census calls it country and speaks of the people as "rural population." If it is a city, the census lists the people as "urban population."

The persons of the United States were counted for the first time in 1790. In that year only three out of every hundred Americans lived in places of 2,500 people or more; that is to say, 3 per cent of the people were urban and 97 per cent were rural. In 1940, 57 of every 100 people in the United States lived in cities. We are becoming a nation of city dwellers.

"Why this rush to live in the cities?" you ask. One reason is that there are usually more jobs there.

Next, you may ask, "Why does a city grow in one place and not in another?" This happens because there is something about the spot or its location that makes



AVERAGE LENGTH OF FROST-FREE SEASON

it a good place for people to live or to manufacture things or to buy and sell things. Some cities are beside harbors where ships can load and unload. That makes a city. Some are close to a big mine where many miners must live. That makes a city. Some are in places where there is plenty of power to run machines and also where it is easy to get raw materials, and to ship factory goods. That makes a manufacturing city.

The Valley of the Sun has two cities, Phoenix and Tucson. Phoenix has two reasons for being a city. It is the state capital. Then, too, Phoenix is close to irrigated land. It is the trading center for the people who live on the farms and in the villages on this irrigated land.

Tucson is the other city. It makes its living chiefly from the state university and sunshine. Tucson is a health resort. People by thousands go there every winter from all parts of the United States and some foreign countries to enjoy the sunshine, the wonderful sunsets, and the beautiful desert scenery.

1. Do you know the population of your village, town, city, or county? Are you part of an urban or a rural population?
2. Give two reasons why Phoenix is a city; one reason why Tucson is a city.

Imperial Valley

A fight with the river. The land between Salton Sea and the Mexican border is called Imperial Valley, and Nature made it a desert. The valley is a deep saucer, many miles across and 250 feet below sea level at the lowest point. The Colorado River goes lapping along past a part of the rim of the valley, trying to get into this saucer of desert land.

"How nice," said the early settlers about fifty years ago. "We will build a canal from the river and let the water run downhill to our fields here in the valley." And they did. Water made the dry valley lands an island of green in a sea of yellow sands.

In the spring of 1905, the river gathered melted snows as usual from the Rocky Mountains in Colorado, Utah, and Wyoming. All this snow water made the river waters rise to their full height and break through the banks of the canal that the settlers had made. The rushing waters ran down into Imperial Valley. "I'll fill up that saucer of land," said the river. "I'll make a lake of it."

For almost two years the water of the Colorado River cut great channels through the fields as it rushed down into the saucer valley where the settlers had their farms. The water drowned the farmers' crops. It washed out roads and railways. It tore down houses, barns, and other buildings. The lake—the Salton Sea—got bigger and bigger. It would soon drown the towns.

1. In what part of California is the Imperial Valley?
2. Use your map to compare the area of land around the Salton Sea in California and the Salt River Valley in Arizona. What color is used to show each of these areas on your map? What do the colors tell about the land?
3. Which valley do you think would be easier to irrigate, the Salt River Valley or the Imperial Valley? Why?

Hoover Dam. "What is going to become of us?" cried the valley people.

"We will help," replied men whom our Government had sent to the valley to learn the ways of the river.

The government men saw what the river was doing, and they studied the floods and the dry period of the Colorado River. Finally they said, "We will go up the river and see if we can find a

Paul's Photos

Blooming yucca, "Candlesticks of the Desert."

deep, narrow gorge where we can build a dam."

They went upstream until they came to Black Canyon, near Las Vegas, Nevada. Here they found a very narrow place in hard, strong rock. Here the Government built Hoover Dam, 726 feet high.

Hoover Dam stops the floods of the mighty Colorado River and piles up its waters to form Lake Mead, largest man-made lake in the world. The city of Chicago, Illinois, could be dropped into Lake Mead with room to spare.

Imperial Valley people now are happy because there are no more floods, no more low water; and there is a big, new canal—the American Canal. It is 232 feet wide at its widest part, 21 feet deep, and 80 miles long. The canal leads water safely from the river near Yuma, Arizona, into the valley where the soft, rich land needs to be irrigated.

The waters of the Colorado River are also used at Hoover Dam for water power, to make electricity, and to supply cities as well as farms and orchards.

Crops and weather. Perhaps you have seen a crate of cantaloupes at the store where your family buys foods. In the Imperial Valley enough cantaloupes to fill 96 such crates can be grown on one acre of ground. Imperial Valley farmers ship to other parts of our country more than 1½ million crates of cantaloupes each spring and more than 3½ million crates of lettuce each winter. The farmers grow honeyball and honeydew melons and other fruits, and many other kinds of early vegetables as well as alfalfa and barley.

"Why such big crops?" you ask. Here are the facts to help you answer that question.

The Imperial Valley has:

1. Seldom more than 3 inches of rain a year.
2. Few killing frosts. Some years none, and farmers can sell lettuce in the winter.
3. More sunshine than any other corner of the United States.
4. Plenty of water for irrigation.

1. Compare these Imperial Valley facts with the weather facts of the Salt River Valley.

Coachella and Yuma Valleys

Date orchards. The part of the valley north of the Salton Sea is called Coachella Valley. Here is just the kind of weather the date palm likes—very dry—long, hot summers, but plenty of water for the roots of the trees to drink, and plenty of sunlight. There are fine date orchards, called gardens, here. And the Coachella Valley could grow all the dates the people of the United States could eat and, if you like, you may add Canada.

Near Yuma, on the Arizona side of the Colorado River, is the Yuma Valley. It gets water from the Colorado River in a strange way. The water is taken from the river in California through an open ditch toward Yuma. There the water runs into a big pipe that carries it under the Colorado River and lets it be used to irrigate the fields on the Arizona side of the river.

The city of Yuma is the chief town of this rich area near the mouth of the Colorado River.

1. On an outline map of the Western States mark the following:
    a. Colorado River
    b. Hoover Dam
    c. Lake Mead
    d. American Canal
    e. Salt River Valley
    f. Imperial Valley
    g. Coachella and Yuma valleys
    h. Willamette-Puget Sound Valley

Something to Do

1. Do you understand the meanings of these words? Use them whenever you can in speaking or writing.
    hamlet
    rural
    urban
    gorge
    growing season
2. How well can you do what each of these items tells you?
    a. Name two rivers in the Colorado Basin that provide water for irrigation.
    b. List four ways in which building dams can help the people.
    c. Name the state in which Hoover Dam is built.
3. Review your understanding of these terms. Write a few sentences to explain each term or idea.
    a. frost free
    b. Hoover Dam
    c. mountain pastures
    d. irrigated lands
    e. water power
    f. an acre of ground

A Short Quiz

Write the following sentences, choosing the word in parentheses that will make the statement true.

1. The name of the canal that leads water from the Colorado River into the Imperial Valley is (Sacramento, American).
2. Light rainfall is one of the reasons for soil being (rich, poor).
3. Imperial Valley can produce fruit and early vegetables because there is little (frost, rainfall).
4. Good crops can be grown in a dry valley if there is plenty of (sunshine, water).
5. The Coachella Valley is well known for its crops of (oranges, dates).

Date palms grow 80 feet tall and bear from 100 to 200 pounds of fruit a year. Covers protect the clusters while they ripen.

Black Star

© *Screen Traveler, from Gendreau*

San Francisco is built on hills. From Nob Hill you look across the city to Telegraph Hill.

Chapter 15

Two California Valleys

The Valley of Southern California

A crowded corner. It is summer vacation, the day is hot, and you have been playing ball. As you come bursting into the house, a big pitcher of cool, sparkling lemonade is on the table.

"That's great!" you say. "Lemonade will just hit the spot!" You drink, your thirst is gone, and you begin to feel cool and refreshed.

If you know your geography, you will say, "Thank you, California," because the lemons came from the "Golden State." The chances are about 99 out of 100 that the lemons were grown along a narrow strip between the mountains and the sea, between San Diego and Santa Barbara. This small corner of the United States we call the Coast Valley of Southern California, or just Southern California, and a very crowded corner it is. Almost half the people of California live here. A million or more visitors come each year. They come from every state in our country and from almost every foreign country to this warm, sunny land between the mountains and the sea. "Foreigners," the Californians call them and grin.

In 1910, this narrow coast strip had about six hundred thousand people. Thirty years later it had about three million people. Hundreds of thousands more came during World War II. How many war workers, soldiers, and sailors remained to make homes for themselves in Southern California will not be known until 1950. Our people, as you may have learned, are counted every 10 years—1940—1950—1960. This count is called the census.

1. Look carefully on a physical-political map at the strip of land we know as the Coast Valley of Southern California. Between what city and town does it stretch?
2. What large city lies in this valley?
3. What do the map colors—green, yellow, buff, and brown—tell you about the elevation, that is, the rise from sea level to mountains in this strip of land? Discuss this with your classmates.
4. Check the population table in the appendix to get the 1940 census figure for the state of California. The Coast Valley of Southern California had about three million people in 1940. What fraction of the California people live in this coastal valley?

Pleasant weather. "Why have so many people come to live in the Coast Valley of Southern California?" you ask. The first answer is, "Good weather." No howling blizzards followed by cold snaps with the temperature below zero. No hot, sticky days, followed by crashing thunderstorms; just pleasant weather, good for play or work out-of-doors all year round. To be sure, a bit of frost comes every year, but seldom before December or after February 1.

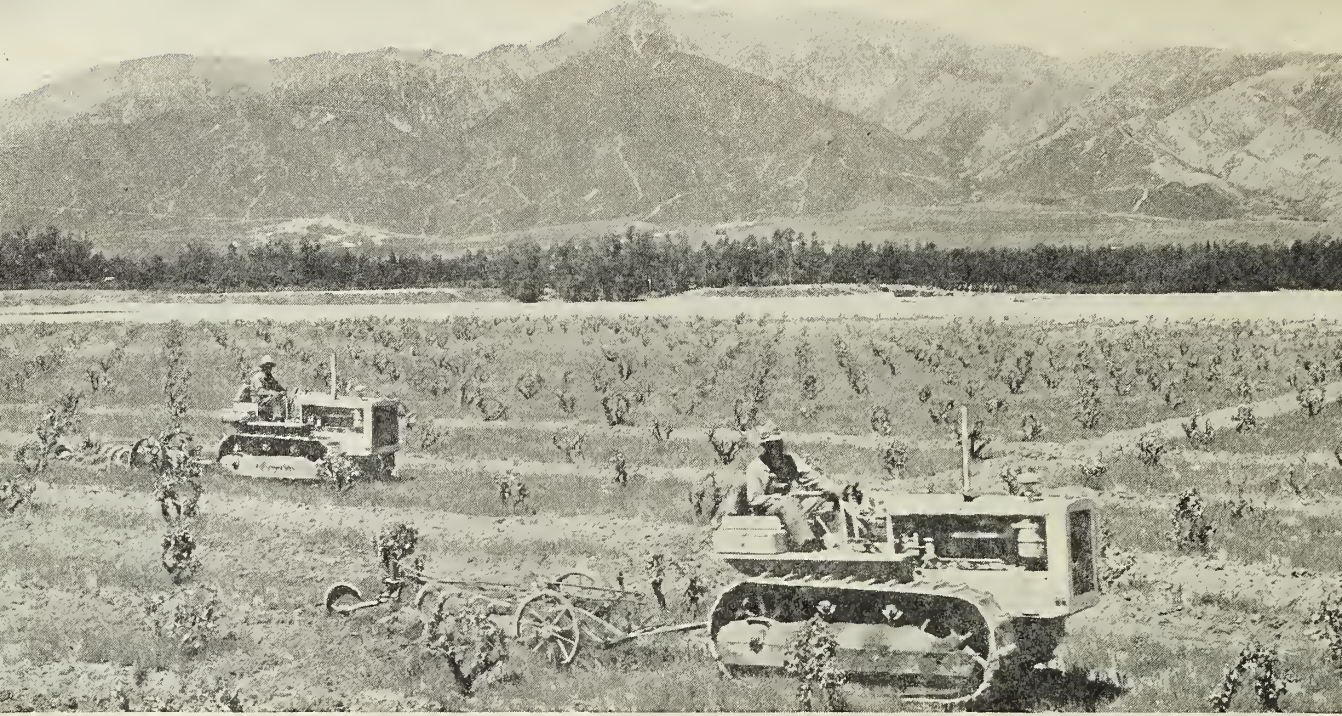
In Los Angeles, July temperature averages about 70°; some days warmer, some cooler. January usually averages between 50° and 60°. It is a land of little rainfall. The rain falls mostly in winter, little or none at all in summer. San Diego has about 11 inches of rain a year; Los Angeles, 15; and Santa Barbara, 18. The valley is not in "Sunshine Corner," but it does enjoy 200 or more clear days a year.

Sea and mountains help make the weather in Southern California. The winds in this part of our country blow much of the time from the ocean. These winds are cool in summer and warm in winter. The mountains at the eastern edge of this lowland serve as a wall that keeps the cold blasts from the north and east out of the valley.

1. Check a rainfall map to find how much rain falls on the mountains of Southern California. Review what you learned about sea winds against a mountain wall.

Frosty weather moves downhill. In summer the basement of your home is probably cooler than any other part of the house. Cool air is heavier than warm air. Cool air sinks. Warm air is pushed up by the heavier cool air. Warm air rises because it is light. The same thing happens in hilly country. On cool nights when there is no wind, the coldest air slides down into the valleys. Plants there may be nipped by frost while there is no frost on the slopes above.

Suppose you were on the Blue Ridge Mountains in autumn. This is a part of the Appalachians, not far from Washington, D. C. At sunrise on an October day you could look down 600 feet into a valley white with frost. The mountain slope where you are has no frost. This movement downhill of colder air is called air drainage, and it happens in all sloping land. Air drainage is one of the big ideas for you to remember about Southern California. Air drainage is one of the



Caterpillar Tractor Company

Tractors pull plows through this vineyard. California has eighty per cent of vineyard acreage in the United States. Why are California's interior valleys and low coastal valleys good places for vineyards?

reasons why the people there can grow lemons for you. The land slopes from the mountains to the sea. Frosty air slides down to the lower places and collects there. The lower slopes, not the mile-high mountains, are usually frost free. This nice, mild weather has done four things to increase the population of Southern California.

1. It has brought vacation visitors and that makes a big hotel business.
2. The mild weather has brought thousands of persons who have retired to live in California.
3. Many physicians advise patients to live in this healthful, mild climate.
4. The climate is also good for many valuable crops. The farmers can grow much produce on a little piece of land.
5. The dry weather helps it to be a a good place to make moving pictures.

Southern California farms. This lowland of Southern California is one of the garden spots of the world. The soil is rich because the light rainfall does not soak much plant food out of the soil. Plants grow here for at least 10 months in the year without fear of frost. The bright sunlight helps crops, too.

The mountain wall to the east of the valley is high enough to snatch water from the winds. This falls as winter rain or snow. The water, most of it, sinks into the ground. Men dig wells and pump water to irrigate crops. They bring more water, very much more water, in long canals from the Sierras to the north, and from the Colorado River. This Colorado River water is pumped over the mountains. You can see that man has done a great deal of work in taking water to places where it is needed.

Southern California is a land of many small farms and a few very large farms or ranches. One ranch is so big, it stretches for 30 miles along the Pacific. On another ranch near Los Angeles, flocks of hens lay 125,000 or more eggs a day.

Many Southern California farmers, however, make a good living on farms of 10 acres, sometimes even less. On the lowlands, where the frost settles, farmers with larger farms grow crops the frost does not harm—Lima beans, barley, sugar beets, and alfalfa.

Then on the lower slopes may be grapes and peaches, and higher up, where frost does not come so often, oranges and lemons grow. Almond trees and English walnut trees often are planted about the farm buildings, along the roadsides, and sometimes along the edges of the fields. Also, many farmers have market gardens and grow green beans, cauliflower, lettuce, and other vegetables. Some have chickens and cows. Los Angeles County, California, earns more money from the sale of fruits, nuts, vegetables, and other farm products than does any other county in the United States.

Father Junipero Serra, who arrived in California in 1769, and the other priests who followed after him, did more than build missions to help the Indians. They brought plants to California from the lands near the Mediterranean Sea in Europe. This part of Europe has a climate like that of Southern California, and California got many of its crops from there. Among these were the orange and the lemon.

Today California grows almost all the lemons in the United States, nearly all the English walnuts, and over half the oranges. California leads the states in many other fruits, nuts, and vegetables.

1. List the crops grown chiefly in the valley of Southern California; on the lower foothills slopes; on the higher slopes.

The movies. During World War II, California motion pictures followed our troops. The very latest films were flown to our armies, wherever they were, and to our ships at sea. American soldiers and sailors, Wacs and Waves and army nurses were called by the war to serve their country in far-away lands. But they saw American movies. These boys and girls could pretend, while seeing a picture, that they were home again at their neighborhood theater. This helped them to do a hard job better, and to get it over more quickly.

Two out of every three motion pictures shown throughout the world are made in four localities in or near Los Angeles—Hollywood, Burbank, Culver City, and San Fernando Valley.

In the early days of the movies, pictures were made in New York City, Chicago, Philadelphia, and other eastern cities. Then the studios, one by one, moved to Southern California.

In this part of California, one does not have to go far to find almost any kind of scenery needed for a picture: sea or desert; mountain, valley, or plain; city, village, or farm; forest or snow field. The weather lets people work most of

Lights! Cameras! Action! Movies provide work and entertainment for many people.

Black Star

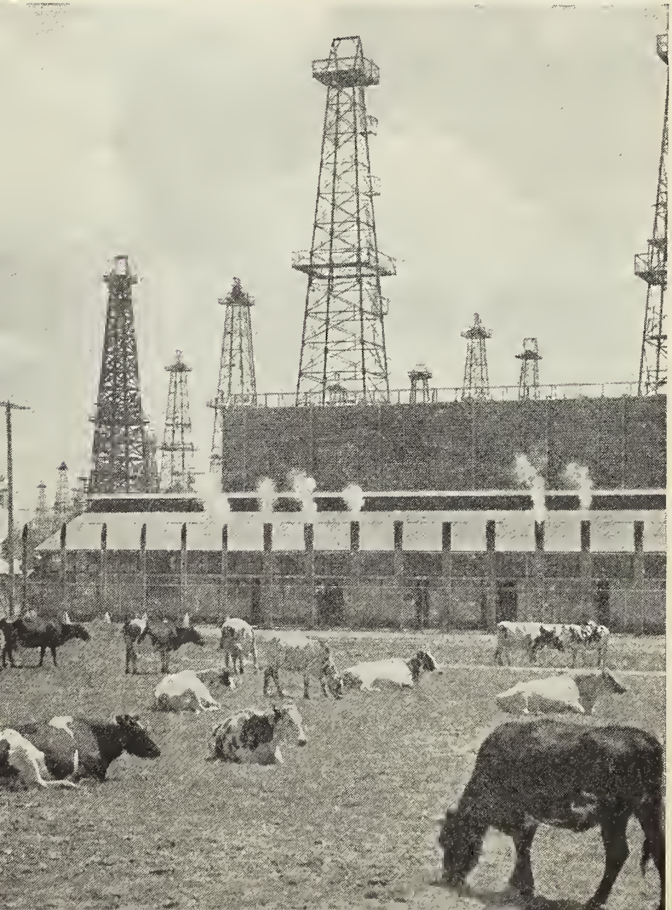
the year out-of-doors in comfort. Here is bright sunlight for clear, sharp pictures. All a director needs to do is to pick the spot for his picture, load actors, engineers, and cameras into automobiles and travel there. In an hour or two the picture can begin.

Movies nowadays do not depend so much as they used to on "sea, sand, sun, and scenery." A director may say to his helpers, "Build me an oasis." Or he may say, "Run down to the horse farm and hire me half a dozen Arabian horses, and stop at the wardrobe room for the proper clothing for 10 Arabs and for an English gentleman in the time of Queen Elizabeth. Fix the lights to show the desert at sunrise." Then he takes his picture either inside the studio or in the yard outside.

"Black gold." California is a lucky state. It is rich in oil as well as climate. Why do you suppose petroleum is sometimes called "black gold"? Nature made this thick, dark-colored oil from fish, small animals, and small plants. Long, long ago, she placed it in the rocks below the surface of the earth. Men bore wells through the rocks, and the petroleum either gushes from the wells or is pumped out.

Oil wells and dairy herds are close neighbors in this part of the Americas.

Ewing Galloway



California became a heavy producer of petroleum about the year 1900. Now California stands second only to Texas as an oil state. And Southern California produces two out of every three gallons of California petroleum. This oil drives automobiles, trucks, and locomotives. It helps people to come to California. It runs engines that drive factory wheels and has done much to help Southern California become a land of factories. Oil has helped to bring home-seekers to California from other states and other countries.

1. What other mineral besides petroleum is often called "black gold"?
2. How has the resource of petroleum helped Southern California?

Southern California cities. The Valley of Southern California might be called "City Land"—so many of its people live in cities.

San Diego is a port city. "Best harbor in all the South Seas," said Sebastián Vizcaíno, the Spanish explorer who gave the bay of San Diego its name. Our Navy must have agreed with him. For at San Diego there is a great naval base. A base is a place where naval ships are repaired and take on supplies and crew.

San Diego has airplane factories that at one time had jobs for 45,000 workers. Here, also, are fish canneries, especially for tuna. And thousands of tourists visit this sunny part of our coast to enjoy weather that seldom goes above 70° or below 50° and goes for years at a time without having killing frost.

The cluster of cities that has Los Angeles for its center has more than three million people. Tens of thousands of these people come from some other place to live in Southern California after they retired from business. These cities take care of more than $1\frac{1}{2}$ million tourists a year. The people of these cities say the whole world knows Southern California through the moving pictures that are made there. They build more airplanes than any other part of the United States. They assemble more automobiles than any other place except Detroit, Michigan. They are second only to Akron, Ohio, in turning out rubber tires, and don't forget the oil. People in these cities make gasoline, oils, greases, other petroleum products from the good "black gold" that pours from their oil wells. This oil makes cheap heat for houses and cheap power for factories. Oil has done much to help build up manufacturing in recent years.

Some years ago, the people of Los Angeles decided their city must become a seaport. They did not have a natural harbor like that of San Diego or San Francisco, so they made one. They built a breakwater—that is a wall offshore to break the force of the waves. Then they dug a big, deep harbor inside the wall. About 6,000 ocean ships enter and leave this harbor each year. Los Angeles is now one of the leading ports of the United States. Her ships go to every continent.

1. Think about these questions and discuss them with your classmates.
   a. How do the sea and mountains help make the weather pleasant in Southern California?
   b. What is meant by air drainage?
   c. How has the mild weather of Southern California helped to increase the population?
   d. What are the four reasons good crops can be grown in this coast valley?
   e. Why is the Los Angeles area the center of the motion picture industry?

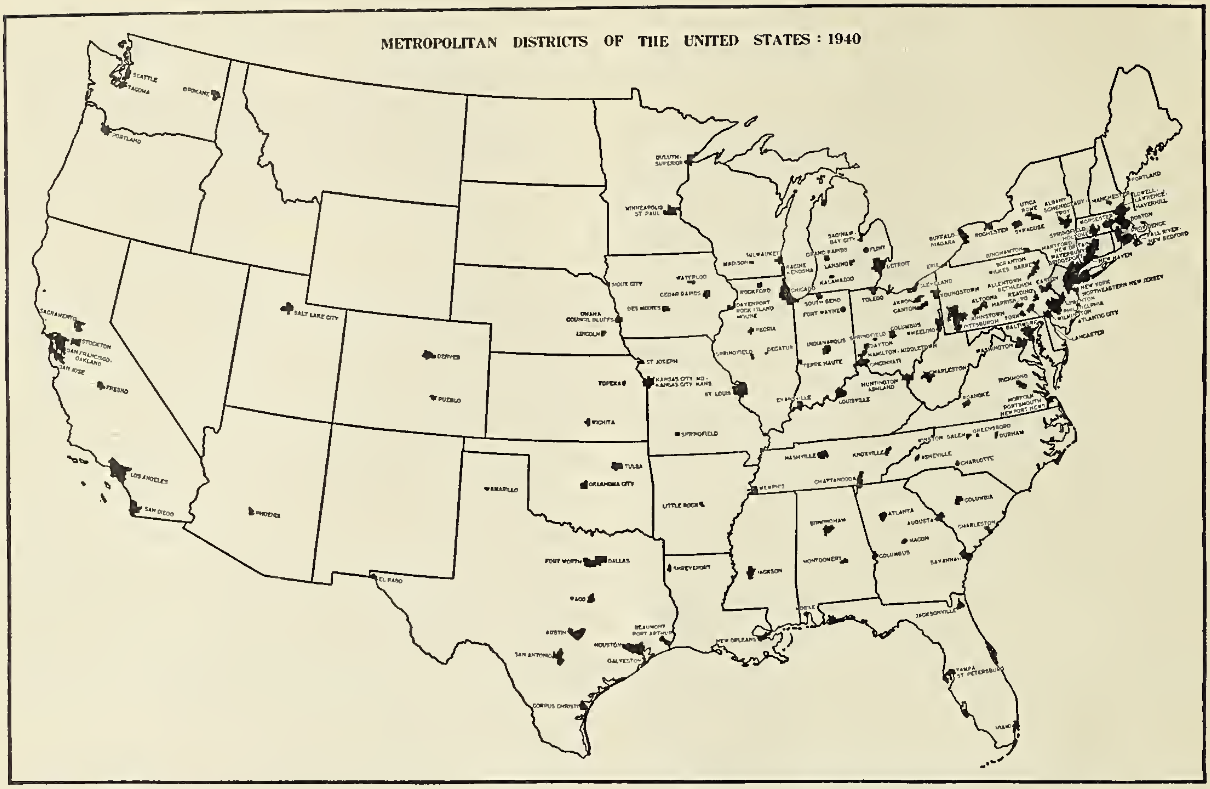
Metropolitan district. The word "city," as commonly used, means an area of land with many people living on it and having one city government for the whole of the area and all of the people who live on it. The larger cities have a "central city," a section where most of the business is transacted. Surrounding the central city are factories. Outside this area are the principal residential areas. The larger city also is surrounded by smaller, independent, residential cities or towns, called suburbs.

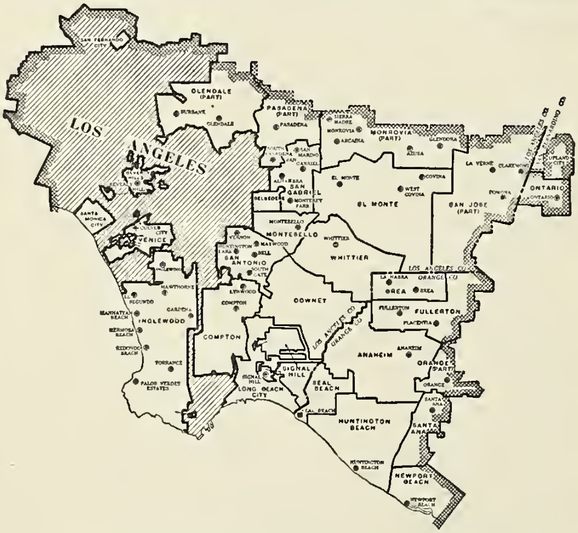
Los Angeles is a city. Pasadena is a small city. As you ride along you would not know when you passed from Los Angeles into Pasadena, but each city has its separate government.

Many of our cities have grown and the towns near them have grown until both are cities. They join each other. Streets and street cars run from one city into the next as they do from Los Angeles to Pasadena, to Long Beach, and to Glendale, but there are still several city governments. We say there are several cities as we count governments, but all of them together are really one city in the way their people live and make their livings.

There are other smaller cities and towns near Los Angeles. Many of the people who live in these towns go to Los Angeles to work and return to their homes each afternoon. Such towns are called suburbs.

The census office in Washington has made a name for such a group of cities


METROPOLITAN DISTRICTS OF THE UNITED STATES : 1940



and towns—metropolitan district. A metropolitan district includes a central city, neighboring cities, suburbs, and other land near it, with at least 150 people or more per square mile. At the 1940 census, the Los Angeles Metropolitan District had 2,900,000 people. Nearly half of them lived outside of Los Angeles City in dozens of smaller cities.

Locate your metropolitan area or the one nearest your home. Explain the term "metropolitan district." Notice the suburbs that help make up the Los Angeles Metropolitan District.

The term metropolitan district is very useful. It helps us to understand our country better.

The map shows us the 104 metropolitan districts of the United States. You see a very large one at the mouth of the Hudson River—New York; another large metropolitan district at the lower end of Lake Michigan—Chicago.

The Metropolitan Water District. Los Angeles grew so rapidly that there was not enough water to meet the needs of the people. So the city government built a long aqueduct and brought water 254 miles from the Sierra Nevada Mountains to the Los Angeles City reservoir.

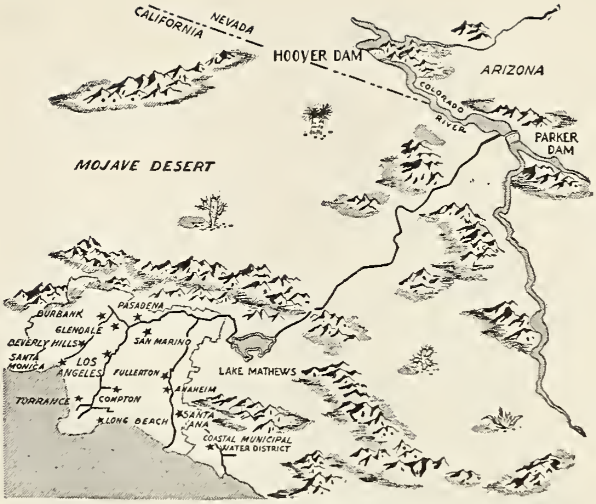
The city kept on growing and after a few years this new system did not bring enough water. Also many of the smaller cities needed more water, but no new supply could be found in the Valley of Southern California, or in the Sierra Nevada Mountains. The Colorado River was the only possible source to get more water. Colorado River water must be carried a long distance and pumped up over mountains.

Thirteen cities could not possibly raise the money to make thirteen long canals and put in thirteen sets of pumps to lift the Colorado River water up over the mountains and bring it to their own city reservoirs. But they all joined together and did it. The thirteen cities formed the Metropolitan Water District of Southern California.

The Metropolitan Water District is a kind of business corporation somewhat like a railroad company or a telephone company. It serves towns in a certain area if they wish to be served. It spent millions and millions of dollars and worked for years digging canals and tunnels under mountains and building reservoirs to hold water. Power from Hoover Dam pumps the water over the mountains. Then the managers of the water district sell the water to any town that needs it. Some do not need it.

This Metropolitan Water District is a great community enterprise which makes it possible for hundreds of thousands of people to live in Southern California.

1. Why do you think some of the Los Angeles suburbs do not need to buy water from the Metropolitan Water District?



Some areas with little rainfall have a problem to supply crowded districts with water. The Metropolitan Water District of Southern California pipes water from the Colorado River, a distance of more than 200 miles.

The Great Valley of California

The sunny side of the Golden Gate. Let us pretend that we are looking at a large map of the state of California. We find San Francisco on the map and before us is the Golden Gate leading into and out of San Francisco Bay. There are cities of the San Francisco Metropolitan District beside the bay, and low mountains near the sea. Beyond the low mountains a wide valley spreads away to the north and to the south. It is the Great Valley of California. To the eastward we see Sacramento, the capital city of California, and far to the eastward are the high Sierras with Mt. Whitney near one end and Mt. Shasta near the other end.

There are many small valleys in the Sierras. A stream of mountain water runs out of each small valley. The many small rivers run into two larger rivers which drain the waters of the Great Valley into San Francisco Bay.

This valley is about 500 miles long and as much as 50 miles wide. The states of Delaware, New Jersey, and Massachusetts could be laid in the valley with room to spare.

1. On a map locate San Francisco and Sacramento; Mt. Whitney and Mt. Shasta.

Cal. Toll Bridge Authority

The San Francisco-Oakland Bridge links the bay cities and metropolitan San Francisco.

2. Can you see the many small streams that come out of the Sierras? Into what two large rivers do these many small rivers run? Name the large bay into which these rivers flow.

Land from the sea. Long, long ago, as we count time, the Great Valley was a big bay—Great Valley Bay. Ships could have sailed through the Golden Gate to any part of Great Valley Bay if there had been ships in those days. On all sides of the Great Valley Bay, Nature was at her old, old job of breaking rocks and forming soil. Nature is always at work. The rain and the small streams carried the earth, the grains of sand, and the small pebbles into the bay. Flowing water cannot carry big rocks.

The streams carrying this soil and sand and pebbles entered the quiet water of the bay. All of this material settled to the bottom. After many years had passed—we know not how many—the bay was filled and became dry land, level or gently sloping, that is, all of it except one small piece. That piece is not yet filled. It is the Bay of San Francisco. But the rivers are putting particles of earth into it every day of every year.

1. Explain in your own words how Nature helps to change bays into dry land. If possible, find some place near your school where you can see this process at work in a small way.

Great Valley weather. The Great Valley, within its mountain walls, has hot summers and comfortably cool winters. The thermometer on a July or August day may, and often does, read 100° or more in all parts of this long valley. But the air is dry. Heat does not affect you as it does in the lands of wet summers. The nights are much cooler than the days.

January temperature in the valley is usually between 40° and 50°. Frosts come, but seldom before December 1 or after March 1. Parts of the valley sometimes get through a whole year without a freeze. The coldest day Sacramento has ever had was only 17°.

"What about rain in the Great Valley?" you ask. There is not enough rain to suit the farmer, and it comes at the wrong time. Bakersfield gets on the average about 7 inches of rain a year; Sacramento gets 16 inches; and Redding, 37 inches. The rain falls during the months from October to April. The summers are dry, with a thundershower once in a great while.

These warm, dry, sunny summers are a great help to the farmer, if he can get enough water to irrigate his land. The sunshine dries his hay quickly, and ripens the grain and fruit. The summer sun dries his fruit cheaply out-of-doors. The dry air makes the flesh of peaches, cherries, and other fruits more firm than the fruits that grow in places with wet summer weather. Bright sunshine gives fruit good color and flavor.

1. From what you have learned about the effect of a mountain wall and winds from the sea, explain why Bakersfield has only about 7 inches of rain a year. Use a map to help you.

The fight for water. The biggest job that man has in this valley is to get water. Much rain and snow falls in the Sierras and some falls on the Coast Ranges. While the snow is melting in spring and early summer, streams of snow water come tumbling out of these mountains and race to the sea. But not for long. As summer advances, the river waters get lower and become a mere trickle in the smaller streams, and none at all in many of them. If there is any water at all, the farmer turns it into his fields.

Much water, to be sure, sinks into the ground. Men dug wells and pumped this underground water to the thirsty crops. They dug more wells. They pumped less water. They dug the wells deeper. The water got less and less. The bottoms of some wells in the Great Valley were below the level of the ocean. Then the farmers did worry. "Suppose some day we pump salt water. It will kill our plants. Our soil will be ruined for planting."

"What shall we do?" The answer: "Build dams! Go up the two rivers. Find narrow canyons in the mountains. Build dams. Store your winter rains and your flood waters."

Shasta Dam is the second highest one in the world, 560 feet, a bit higher than is the Washington Monument in our Nation's Capital. The dam has a spillway—a path over the top for water to flow, and then drop 480 feet to the rocks below. Niagara Falls are 167 feet high.

"No more floods; no more dry irrigation ditches," says the dam to the river. "You get just enough water to float man's boats—no more—but you get it all the year."

San Jose is the largest fruit canning and packing center in the world. It produces more than 150,000 tons of dried fruit each year. What California climate facts make possible such scenes as this?

San Jose Chamber of Commerce

"Get to work," roars the dam to the water. "Get into that pipe. Spin those turbines. Drive those dynamos. Make electricity. Then go on your way down the river and give the people some pure, mountain water for home use. Give that mill owner the thousands of gallons he needs every day to keep his mill running to give jobs for his workers. Run into those ditches and give the plants a good, long drink and do it often."

Electricity to most of us means electric lights, or current to run the toaster and the washing machine, or to make the doorbell ring. Where electricity can be made cheaply by water power, it is put to work in hundreds of other ways.

1. Make a list of the ways the Great Valley people can make electricity work for them.

Fruit neighborhoods. Orchards, orchards, everywhere! Suppose we now look at some Great Valley facts and see what the facts mean. The Great Valley:

is big
has air drainage
is hot in summer
has light rain
has fine rich soil
has level or gently sloping surface easy to irrigate
has water for irrigation
is sunny 220 or more days a year.

These facts spell out the same word in the Great Valley that they do in the Imperial Valley and the Valley of Southern California, and the word is

FRUIT.

The Great Valley helps California to grow almost half of all the orchard and vineyard fruits in the United States. A vineyard is land planted with grapevines. Every time you see any of the following fruits in a city market, say to yourself, "The chances are much better than nine to one that fruit came from California."

Grapes
Raisins
Figs
Olives
Walnuts
Lemons
Dates
Avocados

The Great Valley also helps California to stand first among the states in:

Plums
Prunes
Apricots
Pears
Oranges
Peaches
Almonds
Walnuts
Cherries

Vegetables. The place where the Sacramento and San Joaquin rivers flow together is the last piece of valley land that the rivers made. This new-made land is the delta of the two rivers.

Nowadays this delta grows great crops of asparagus, celery, lettuce, tomatoes, spinach, onions, potatoes, and other vegetables, and also rice. It has helped California to stand first among the states in growing vegetables. Ninety-three out of every hundred cans of asparagus in the world come from the fields and the canneries in this delta.

California has had swift changes as the population has increased swiftly. The first settler sold hides and skins. Then came gold, then wheat. California climate suits wheat splendidly and shiploads of wheat went in sailing vessels to Europe. Now the chief crops are fruit, and the Californians buy wheat from other states. Enough sugar beets are grown in the northern part of the Great Valley to rank California in some years the first state in beet sugar production.

Paul's Photos →

Looking over San Gabriel Valley in Los Angeles County, you see green orange groves, fertile farm lands, and snow-capped mountains.

Smaller coast valleys. The small valley south of San Francisco Bay is the Santa Clara Valley—an island of fruit in a sea of mountains. No other place in the world, anywhere near the size of this valley, grows so much fruit. Every third prune in the world, so the valley people say, comes from the Santa Clara Valley. Here also are big orchards of apricots, pears, cherries, and groves of walnuts. So much fresh fruit means plenty of jobs for people who pick the fruit, can it, or work at drying and quick freezing.

The Salinas Valley, Napa Valley, Russian River Valley, and Sonoma Valley are some other smaller productive valleys in the Coast Ranges.

Californians work together. In the year 1908, people of the United States ate 31 oranges per capita. Per capita means for each person. Now we eat 80 oranges per person. "Why?" you ask. Because the orange growers of California learned to cooperate. They began to work together.

"We will grow the best oranges that can be grown," said they. "We will pick the fruit without bruising it. We will send our oranges to central packing houses. We will wrap each orange in stamped tissue and pack oranges in only a certain kind of box. We will pay for advertisements in newspapers and magazines. We will teach people to drink orange juice as well as to eat oranges." And they did. Result: the American people are a bit healthier, and the orange growers are earning more money.

Then the prune growers said, "We also will work together—grow, pack, and sell prunes." The raisin growers said, "Buy raisins. Get your iron today." The beekeepers got together to produce and sell honey. Californians, as you see, make the sun work for them. Then they work together.

1. Can you tell how the fruit growers help each other by working together?

Bay cities. All the water of the Great Valley flows to San Francisco Bay. So does much of the trade of the valley. San Francisco Bay is lined with the cities and towns of the San Francisco Metropolitan District. The city of San Francisco, seated by the Golden Gate, is largest of these places. Oakland, on the mainland, "'cross the Bay" is second. The Oakland-San Francisco Bay Bridge, more than eight miles long, connects these cities.

One of the most thrilling sights in all the world is to cross Golden Gate Bridge, the longest one-span bridge on earth, and to climb Mount Tamalpais in the late afternoon. Then watch the sun as it sinks in a blaze of light beneath Pacific's waters. Turn and let your eyes sweep over the bay just as the lights of evening light up the great bridges and twinkle in thousands of homes and office buildings in the San Francisco area.

It was here that an oceangoing ship was built in 4 days, 15½ hours during World War II. And shipbuilding still gives jobs to men and women in the bay cities. They can work out-of-doors all the year in temperatures that seldom go above 75° or below 40°.

The bay cities also refine oil, turning crude petroleum into many useful things, as gasoline or oil for automobiles or machinery, and to heat buildings. Around the bay are canning plants and quick-freezing plants for fruits and vegetables. There are plants that prepare meats for the butcher shop. There are plants that do a great deal of printing. There are iron and steel mills, and places that make paints and varnishes, and a thousand other things.

Philip Gendreau

Vegetables are grown on a large scale on the delta of the Sacramento and San Joaquin rivers. What factors make possible the marketing of California lettuce in New York City?

The big bay is used for surface ships that sail to all parts of the world and also for airships. Clippers that fly the Pacific to Asia, Australia, and New Zealand take off from and land upon the surface of the bay.

Roads and mountains. Do the people of California wish to take vacations? The Californians have built good roads to all parts of the state which is rich in good vacation lands. Near San Francisco are the beautiful Coast Ranges; to the north are the tallest trees in the world; to the east, across the Great Valley, are high mountains, the great Sierra Nevadas. There in one of the several beautiful parks are the largest trees in the world. The most famous of all these parks is the Yosemite.

This park, in the high Sierras, has some of the world's most beautiful scenery. Some day, we hope, you will stand at Glacier Point and look out toward Yosemite Falls. These falls are fourteen times as high as Niagara Falls. Another sight is Half Dome, a rock that rises almost a mile straight up from the valley.

As early as 1864, President Lincoln and our Congress set aside part of this wonderland for the continual enjoyment of everybody from everywhere.

In winter, some of these parks are closed to automobiles on account of snow. But the snow is fine for winter sports. You may live in the mild climate of the San Francisco Bay or Southern California and have days of coasting, or skiing, or snowshoeing. Or you may just look at evergreens and snow in the real winter on the mountains only a few hours away.

1. Suppose you could have a vacation in California. Tell what you would choose to see and do.

Something to Do

1. Discuss these statements with your class:
   - a. Lower slopes of mountains are usually frost-free.
   - b. Sun drying of fruits is possible in California valleys.
   - c. Lack of coal is not a handicap to industry in California.
   - d. California now buys wheat from other states.
   - e. The Los Angeles Metropolitan Water District is a community enterprise.

2. Look at the labels on cans of fruit in your home or in a grocery store to find where the fruit was packed. Look also for the labels on boxes of dried and fresh fruit. Make a list of the different kinds of fruit from different states.

3. The Great Valley of California can be divided into three parts—north, central, south. Choose one of these sections of the valley on which to write a story. Tell of any special crops that are grown in the area.

4. Write at least one interesting fact about each of the following:
   - a. Golden Gate
   - b. San Diego
   - c. Hollywood
   - d. Sacramento

5. Ask your teacher to help you make a list of the suburbs of your nearest metropolitan district. One of your class may want to write to the U. S. Department of Commerce, the Bureau of the Census in Washington, D. C. for information on your nearest metropolitan district.

6. How are the people in your area supplied with water? Discuss this with your classmates. You may want to invite someone from the town council or from the water company to talk to your class about the water system.

7. Look for pictures of the California valleys to add to your scrapbook.

8. Some of the words and phrases in the following list may be new to you. Use each one in a good sentence of your own to show its meaning.
   - a. elevation
   - b. census
   - c. air drainage
   - d. naval base
   - e. breakwater
   - f. suburbs
   - g. metropolitan district
   - h. aqueduct
   - i. reservoir
   - j. spillway
   - k. turbines
   - l. dynamos
   - m. vineyard
   - n. delta
   - o. per capita

A Short Quiz

Choose the best ending for the following sentences about the Great Valley of California.

1. The delta of the Sacramento and San Joaquin rivers produces large crops of vegetables because
   - a. there is a large market for vegetables in San Francisco.
   - b. the soil is soft, rich, and level.
   - c. water from the mountain snows make it swampy.

2. The crops of fruits and vegetables are made possible because
   - a. people tired of growing wheat.
   - b. of dry weather and warm sunshine.
   - c. of irrigation water supplied by the mountain streams and rivers.

3. Citrus fruits and winter vegetables can be grown because
   - a. of the long growing season.
   - b. there are good means of shipping the produce to other countries.
   - c. we now eat 80 oranges per person each year in the United States.

4. The Oakland-San Francisco Bay Bridge is very useful because
   - a. it is more than 8 miles long.
   - b. it joins Oakland, the railroad center, and San Francisco, the shipping center.
   - c. the workers in the shipyards cross it to get to their jobs.

5. Most of the orchards and vineyards are on the eastern side of the valley because
   - a. Fresno, the raisin capital, is located here.
   - b. air drainage causes cooler temperatures in which non-citrus fruits grow well.
   - c. the western side is used to grow vegetables.

Oregon State Highway Department

A ribbon of road winds through the beautiful Willamette-Puget Sound Valley.

Chapter 16

Other Western Valleys

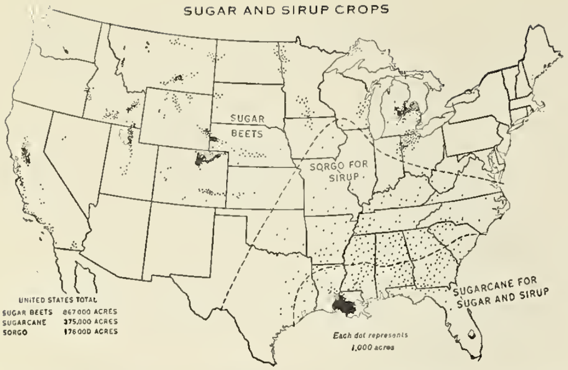
Willamette-Puget Sound Valley

Suppose we take an airplane journey. We will ride so high that we can see a great distance on both sides of us. We start at the northern end of the Great Valley of California and go north. Off to the east we see the white snowcap of Mt. Shasta. For the first 200 miles we are flying over mountains, mountains, mountains! Most of the valleys are narrow, some so narrow there is room for only a road or railroad.

When we get to Eugene, Oregon, we come to a wider valley, wide enough for many farms.

1. Check your map to note the changes in the land as you travel north from the Great Valley of California to Eugene, Oregon. Eugene is near the 44th degree of latitude. Do you see the valley widen as you travel northward from Eugene to Portland? What is the name of this valley?

Good weather for crops and people. "But why so many farms in the valley? Why so many trees?" you may ask. The answer is, "Good weather for crops." Rain falls here every month in the year, but more falls in winter than in summer. Portland gets about 40 inches of rain a year. There are many kinds of farms



U.S. Dept. of Agriculture

Name the states in the western group that grow sugar beets. What sections grow sugar cane?

here. There are potato fields, hay fields, and dairy farms. We see orchards of cherries and walnuts. On both sides of us we see the foothills of the mountains with trees. Above the foothills the mountainsides are thick with evergreen forests. We pass Portland. An ocean steamer is going down to the sea as we cross the mighty Columbia River.

You remember that the people in Victoria mow their lawns at Christmas time. In western North America the rain increases as we go north, all the way from Mexico to Alaska. As soon as we cross the Columbia River, the country is greener. The trees in the valley are bigger. The farms are crowded by the forests. We see some fine, big dairy farms, and fields with long rows of berrybushes.

This valley may well be called "Berryland." Winter is mild with a temperature mostly above 40°. Summer is cool with July temperature from 60° to 70°. Seldom does frost come before November 15 or after March 15. It is just what berrybushes seem to want. The plants can grow without a freeze for 250 days or more.

The Willamette-Puget Sound Valley leads in the growing of loganberries, dewberries, and blackberries. Oregon stands first among the states in quick freezing of fruit—mostly berries, and Washington is second. The climate that suits berries also suits tulips, gladioli, and other flowering plants that grow from bulbs. Bulb growers have whole fields of these flowers in the lowland near Puget Sound. The bulbs are sent to all parts of the country.

Willamette-Puget Sound weather also suits people as well as it suits crops. We work best when the temperature is between 45° and 70° and that is what this valley has. These temperatures let us work out-of-doors in comfort almost all the year. Shipyards on the West Coast broke the records for the quick building of ships during World War I and World War II. Weather was one reason.

This cool weather suits cows, too. A dairy farm near Seattle holds the record for the entire United States with a cow that gave 38,000 pounds of milk in 365 days.

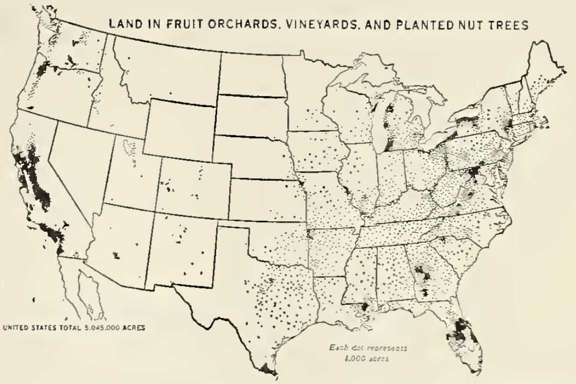
The valley has many farms, but lumber is king—lumber from the Cascade Mountains on the east and from the coast ranges on the west. Here are the finest forests in the world. We see trains loaded with logs going to the sawmill, and other trains loaded with sawed lumber. Some are on their way to the ships on the Columbia and at the ports on Puget Sound. Some are making the long rail journey to the cities of the Eastern States.

As we fly, we see smoke rising in several places—alas, alas! Each "smoke" shows where a forest fire is killing trees in the most valuable forests in the United States.

Lumber may be king in this valley, as the people say, but the king is at war. And enemy, Fire, is far from beaten.

Washington stands second among the states in the amount of money spent to fight forest fires. Oregon is third.

1. Tell why the Williamette-Puget Sound Valley weather is favorable for:
    a. growing berries and flowers
    b. people
    c. dairy farms
2. We learned that the Great Valley of California has only one opening to the sea. What is it? This northern valley has two openings to the sea. Use your map to locate and name them.


LAND IN FRUIT ORCHARDS, VINEYARDS, AND PLANTED NUT TREES
UNITED STATES TOTAL 5,045,000 ACRES
Each dot represents 1,000 acres

U.S. Dept. of Agriculture

How many states do not have fruit orchards, vineyards, or nut trees? Locate your home state.

Portland and Salem. Portland, the "Rose City," lies 118 miles inland from the Pacific, but the largest ships can come here because the channel is 35 to 40 feet in depth from Portland to the sea.

About a third of all the people in the State of Oregon live in the city and work at many different jobs. Most are workers in wood that comes from the great forests on the mountains on each side of the valley. The workers make plywood, pulp, and paper. Plywood is two or more thin layers of wood glued together.

Rainy winds from the Pacific and the mild weather help to make the Portland neighborhood into a big garden. Roses! Well, some day you must visit Portland to see the "Rose Festival."

Fifty-two miles up the Willamette River from Portland is Salem, capital of Oregon and a center for canning fruit and growing hops. The city is a river port. It has a channel 7 feet or more deep.

1. Get a piece of plywood and examine it carefully. Do you think making plywood helps to conserve lumber? Explain.

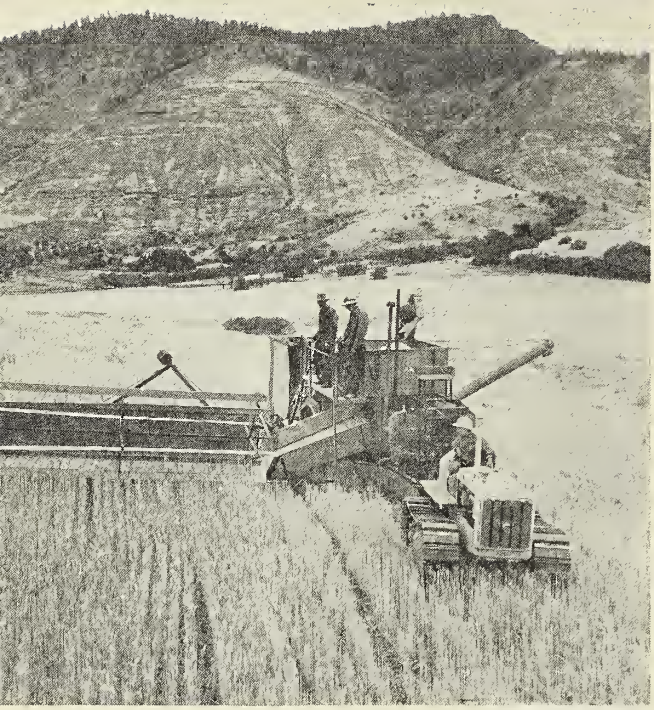
Puget Sound cities. Seattle is by far the largest city on the Sound. Tacoma is second, and Everett, Bellingham, and Bremerton are also thriving towns. One person of every three in Washington State lives in one or the other of these cities.

Along the Sound are piers as much as $2\frac{1}{2}$ miles long. Oceangoing ships tie up at these piers to load and unload. Here also are big dry docks. A dry dock is just a big box that can be opened at one end. A ship enters the box, the door is shut, the water is pumped out. Then while the ship sits in this dry dock, men can clean, repair, and paint the sides and bottom of the ship.

Here also are factories that separate pure aluminum from its ore, and make many kinds of useful chemicals. Seattle has shipbuilding yards and big airplane factories. Here are canneries for fruits, vegetables, and fish. Here also are pulp and paper mills. Why? One answer is the cheap electricity from the Grand Coulee and Bonneville dams.

Seattle is also a great port. Ships go to Alaska, to China, and to many other countries across the Pacific. They go through the Panama Canal to dozens of ports on both sides of the Atlantic.

1. Select the sentences that are true. Change the false ones to make them true.


Philip Gendreau

Tractor and combine help harvest wheat in Oregon.

a. The Willamette-Puget Sound Valley has many kinds of farms.
b. Lumber ranks next to farming in importance in this area.
c. Much of the forest land has not been cleared for farms because the forests are on steep hillsides.
d. Two or more thin layers of wood are glued together to make pulp.
e. Ships are brought into dry dock to be loaded and unloaded.

Valley of the Columbia River

The Columbia River carries more water down to the sea than any river in North America except the Mississippi. The Columbia drains parts of two countries, Canada and the United States. The rainfall map will tell you about the land drained by the Columbia. You will see why most of the land between the Cascade Mountains and the Rocky Mountains is a pasture land and not always a very good pasture land either.

1. Check a rainfall map to review the amount of rainfall in the Columbia Basin in Canada.
2. How many inches of rain fall in the Columbia Basin in the United States? How much rain do you think is needed for thick forests? for farms?
3. What does 10 inches of rain mean?

Upland wheat. The rainfall on the higher land of southeastern Washington is greater than in the lower land and most of the rain comes in winter. This suits winter wheat perfectly. Farmers can plant wheat in the fall and harvest it at the beginning of summer. Much of this land has a wonderful soil made of lava. Not long ago as the earth counts time, but very long ago as we count time, volcanoes poured melted lava over thousands of square miles in the Columbia Basin. The lava has now broken up into soil of great fertility. This soil makes greater wheat crops than can be grown on the Canadian prairies.

Apple valleys. Four small rivers come down to the Columbia from the Cascade Mountains. The Yakima, the Wenatchee, the Hood, and the Okanagan bring water down from the mountains, and it is easy for farmers to lead the water for irrigation out in the valley fields. The climate here suits apples. No other part of the country grows so many. Every fifth apple in the United States is grown in Oregon and Washington, on the edges of the Columbia Basin. These apples are to be found in almost every city market in the United States.

1. Look for labels on boxes of fruit in your grocery store or market. From which state did the apples come? Make a list of the fruits that came from any of the Western States.

Putting a river to work. Forty miles east of Portland, the United States Government has built Bonneville Dam. Boats go up to the Bonneville Dam, locks lift the boats up to the water above the

Oregon State Highway Department

Snow-capped Mt. Hood, the highest peak in Oregon, forms a back drop for apple blossoms.

dam. Boats can then go on to Lewiston, Idaho. This town says it is "the seaport of Idaho."

At the Bonneville Dam, the waters of the mighty Columbia run through turbine water wheels and make electricity. This turns factory wheels, and runs the washing machines and pumps, and does many other kinds of work for people on farms and in the cities far and near. Most of it goes to the Columbia Willamette-Puget Sound Valley, where most of the people of Oregon and Washington live.

Farther upstream is the Grand Coulee Dam, 550 feet high. This is not so high as the Hoover Dam, but it is almost four times as long and has about three times as much concrete in it. The powerful Columbia is no longer running idly away. It has been harnessed and put to work. This makes tremendous electric power that wires carry over the mountains to Seattle and the other cities on the Sound. It is a great help to their manufactures. The Coulee Dam does another thing of great use to the people of the United States. It raises the water up so high that it can flow over a lot of good land. The plan is to irrigate about 1,200,000 acres. This will make homes for many families, and much produce will grow on this rich soil. The people of the Columbia Valley east of the Cascades call it "The Inland Empire." The city of Spokane is its largest city—the trading center for a large area. You may be sure the people of Spokane are interested in Grand Coulee Dam and irrigation.

1. Give the location of the two dams that harness the mighty Columbia River for work.
2. Why do you think the city of Spokane is interested in the Grand Coulee Dam?
3. Write a few paragraphs telling the important and interesting things about this Inland Empire, the Valley of the Columbia River.

Snake River Valley

A sample of irrigated lands. Any high mountain land, as large as is the Western States area, has hundreds of valleys between the peaks and ranges. You have studied some of these valleys by name. The others you must study by sample. We will take the Snake River Valley as a sample.

The Snake River is fed by mountain snows and, as you know, snow very kindly melts in spring and early summer, just when the plants need water. So men built dams—several dams in the Snake and in the smaller mountain streams flowing into the Snake. The dams hold some of the water until late summer.

The valleys in southern Idaho have cold winters but hot summer days and three hundred or more sunny days a year. The valleys need lots of water. The dams give water all year round and how the crops do grow! Idaho valleys grow potatoes, sugar beets, green vegetables, and alfalfa for the dairy cows and for winter feed for the sheep and cattle that come from high pastures on the mountain and dry pastures on the plain. Idaho produces one-third of all the vegetable seeds planted in the United States. It is second only to Maine in growing potatoes. "Spud Valley," one of Idaho's man-made oases, has grown and shipped in one year enough potatoes to fill ten thousand railroad cars.

Every western state has several river valleys irrigated as is the Snake Valley. Farmers in these valleys grow vegetables and fruits, sugar beets, barley, and alfalfa for sheep and cattle that spend the winter in feed lots.

Every western state has other mountain valleys—dozens of them—not irrigated. Some of these valleys have streams in which dams can be built when we need more electricity and more food.

1. On a map trace with your finger the Snake River valley through Idaho. Why do you think this valley has to depend on mountain, snow-fed streams for water for crops? Think again of ocean winds and mountain walls to help you with your answer.

2. Why is it that Snake Valley farms are at the edges of the wide valley?

3. Check the dot maps of alfalfa, sugar beets, and potatoes to prove Idaho's importance in producing these crops.

4. France has more than four times as many persons per square mile as does the United States. Do you think our country could take care of four times as many people as we now have? Give the reasons for your answer.

The Great Basin

One part of the Western States has the Sierras on its western edge and the Wasatch Mountains of central Utah on its eastern edge. This land is called the Great Basin, and most of its people live at the foot of these two high mountains. Between these tall mountains are many lower ridges with valleys between them. The Humboldt River, in one of these valleys, starts in the mountains and stops in a lake. The river never reaches the sea.

The land between the Sierra and Wasatch Mountains has been compared to a basin because nothing runs out of it.

1. Use a map to trace with your finger the boundaries of the Great Basin. Locate the Humbolt River in Nevada. Where does it drain? Can you find a river between the Snake and the Colorado that cuts through mountains to join the Colorado?

2. The Great Basin covers nearly all of Nevada. How many other states are part of it? Why do you think Great Basin is a good name for this area?

Great Salt Lake. The lower lands of the Great Basin are blazing hot in summer and freezing cold in winter. They get about 2 to 8 inches of rain. There is more in the mountains.

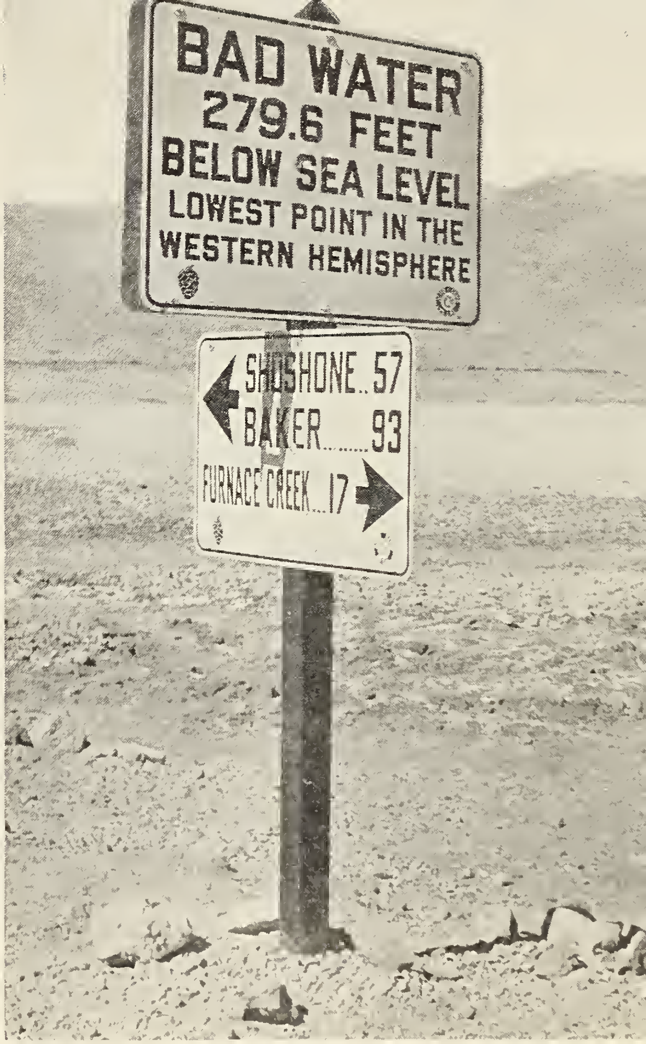
The river beds are full when there is rain on the mountains. The streams flow out of the hills and spread over the flat lands. After a big rain, one stream forms a lake half the size of Rhode Island but only a few inches deep. The hot summer sun drinks the water and leaves salt in the mud. Nearly all stream water has some salt, even if you cannot taste it. The salt that comes to the lake in the water stays in the mud after the hot sun has dried up the water. When salty mud dries, it is as hard as a brick and cracks open.

Some Great Basin lakes are deep enough to last through long dry spells. There are many salt lakes and a few—very few—fresh water lakes. Beautiful Lake Tahoe in the Sierra is one of these. Its shores are dotted with summer homes.

Great Salt Lake is the largest of the basin salt lakes. It is about three-fourths the size of the State of Delaware. Its water is bitter with salt—one teaspoon of salt to three teaspoons of water. "Pretty salty," you say. The poorest swimmer floats about like a cork, but he keeps his mouth closed. Gulps of Great Salt Lake water are very unpleasant, even dangerous.

1. Why is Lake Tahoe a fresh-water lake? Check your map for your answer.
2. Locate Great Salt Lake. Can you find how big it is by using the appendix?

Death Valley. "What an unpleasant name," you say. "What a foolish name," we say. Death Valley should be called "Health Valley" now, or "Wonder Valley!" To be sure, some forty-niners got lost and died of thirst while trying to cross the valley. They were rushing to California for gold. When the noonday sun shot the temperature to 120° or higher, the men needed a gallon or two of water a day to keep going. They did not have water. So the men died, and that valley was called Death Valley.



Black Star

The sign tells Death Valley's story. Deposits of salt, borax, and nitrate of soda are found in the basin. What is the highest point in our country?

Summer days are very hot there—some say, "hottest on earth." Travelers don't bother to heat soup. They just open the can, and the soup is ready to serve. The sun heats it.

Death Valley weather is delightful in winter—dry, sunny, and cool to comfortably warm. Some people who have trouble with lungs or nose or throat come to the valley. They stay in a modern hotel and drive over good roads.

They say the dry air helps them to get well.

1. Locate Death Valley on a map.

Western Land East of the Rockies

Several Western States have some land east of the Rockies. Much of this land is nearly level and it is called the Great Plains.

Lands that have only 20 inches or less of rain are not good for many crops. Yet farmers on the Great Plains do grow crops, chiefly wheat, on the better parts of these plains. They do it by what is called "dry farming."

As soon as a crop of wheat is harvested, the farmer plows his fields. Winter rains come and soak into the broken soil. During the following year he plows the ground once or twice to keep weeds and grass from growing and drinking up the moisture left by the rain and snow that come in this year of rest. Then he plants seed. And if the weather is not too dry, he gets a crop big enough to pay for his work. A crop this year, no crop next year, that is one kind of dry farming.

More than half of Montana is in the Great Plains, and the state often stands third among the states in wheat growing.

1. Use the following words and phrases in sentences to show their meanings:
    a. dry farming
    b. oasis
    c. "Spud Valley"
    d. river system
    e. outlet
    f. Salt Lake

Something to Do

1. Collect pictures or news items about the western valleys for your scrapbooks.

2. Write the names of four dams built by the Government in our Western States. Choose one of the dams to read about in a reference. Make a report to your class on what you read.

3. Suppose you were asked to tell the most interesting and important facts you learned about the Williamette-Puget Sound Valley. Make a list of the items you would include in such a talk.

4. Divide your class into six groups and have each group prepare an outline on one of the six important valleys you read about in Chapters 14, 15, and 16. You should include these headings in each outline: location, type of weather or climate, principal crops, important cities. Make a booklet on our western valleys by clipping together the six outlines.

5. Discuss these questions with your classmates:
    a. How could people make a living in Death Valley?
    b. Why do cities grow in some places but not in others?
    c. Why is irrigation more necessary for farming in the Imperial Valley than it is in the Willamette-Puget Sound Valley?
    d. What industry in the Western States uses the most land.

A Short Quiz

Here are some sentences which have been cut apart and scrambled. Put each one together correctly by reading the first part, then choosing the ending to go with it. Write the completed sentence.

1. There are many farms in the Willamette-Puget Sound Valley

2. Many berries can be grown in this northwestern valley

3. Valuable forests are on the mountainsides

4. The Columbia Basin produces large crops of wheat and apples

5. Most of the people in the Great Basin live at the foot of the Sierra and Wasatch mountains.

    a. because in western North America the rainfall increases as we go north.
    b. because the lower lands are blazing hot in summer and freezing cold in winter.
    c. because of water from the mountains.
    d. because of the climate, lava soil, and irrigation.
    e. because the winters are mild and the summers are cool.

O. Roach

Denver's civic center is west of the capitol grounds. It has a library and a theater.

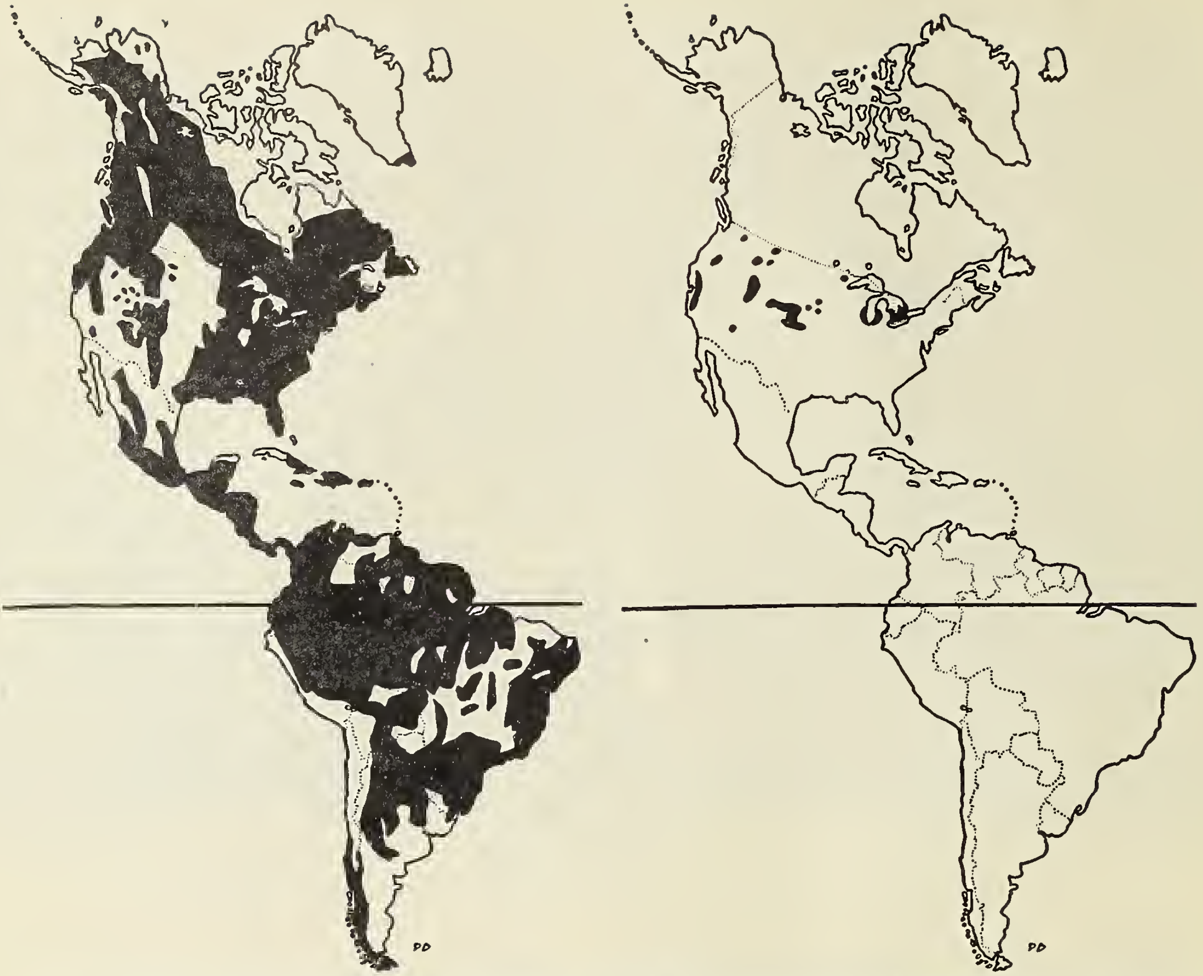
Chapter 17

Inland Cities of the West

State capitals. Every state in our country has its own state capital city. Each capital city has a state capitol building where the members of the state legislature meet to make the laws for the state. In each capital city you will find the office and the home of the governor of the state, and of the state superintendent of schools. In some ways, the superintendent is the head of all the schools in the state. In the capital city are many other workers in the big business of government—and also the people who serve them—the storekeepers, the barbers, the taxi drivers, and all the rest. All of these people make a fair-sized city, often the largest city in the state, because after it gets started it has better stores than smaller towns, and people come to the big town to buy. Then the storekeepers in the small towns come to the wholesale stores in the big town to buy things to sell in their own stores.

Denver, Colorado, is largest of the state capitals of the Western States. We shall use that city as a sample to show that state capitals do many different jobs for us besides the job of government.

Denver, "The Mile High City," is capital of a state sometimes called "The



Tree growth will come naturally on large areas of both continents, but good lumber is scarce. The sugar beet is particular about the climate in which it will thrive.

Switzerland of America." Colorado has 51 mountain peaks, 14,000 feet or higher.

The metropolitan district of Denver has almost half a million persons. Thousands of them work in stockyards and at preparing meats for butcher shops and food stores. They make butter, rubber goods, and machinery for mines. Many mine operators and farmers in distant places get their machinery in Denver. The people of Denver take care of many visitors, for Denver is a tourist town.

These travelers for pleasure stop off on their way to visit the wonders of the Rocky Mountains. Several large mountain parks can be reached easily from Denver by automobile. Some climb Lookout Mountain to see the grave of Colonel W. F. Cody, who was known as "Buffalo Bill." From the top of the mountain visitors look far across the prairies, where the famous scout hunted buffaloes and Indians.

1. What do you know about the surface of the land in Switzerland? Study a physical map to decide whether or not Colorado might be called "The Switzerland of America."
2. What does "mile high" tell you about Denver?
3. Use the appendix to find the western cities that have over 500,000 persons.
4. What is the capital of your home state?

5. Be sure you understand these two words—"capital" and "capitol." Use each in a sentence of your own.

Oasis cities. In this book you have read about several big dams, but there are dozens we have not mentioned. These dams hold back the flood waters of rivers. The water is let out as it is needed to irrigate the dry lands. Each irrigated valley has its towns or cities. Here are stores and supply houses for the people of the town and for the farmers and the miners round about. Often there are packing houses for fruits and vegetables. Perhaps there are factories. Certainly there are railroads, bus lines, and motor truck lines. There are banks for the safekeeping of money, and perhaps there are landing fields for airplanes.

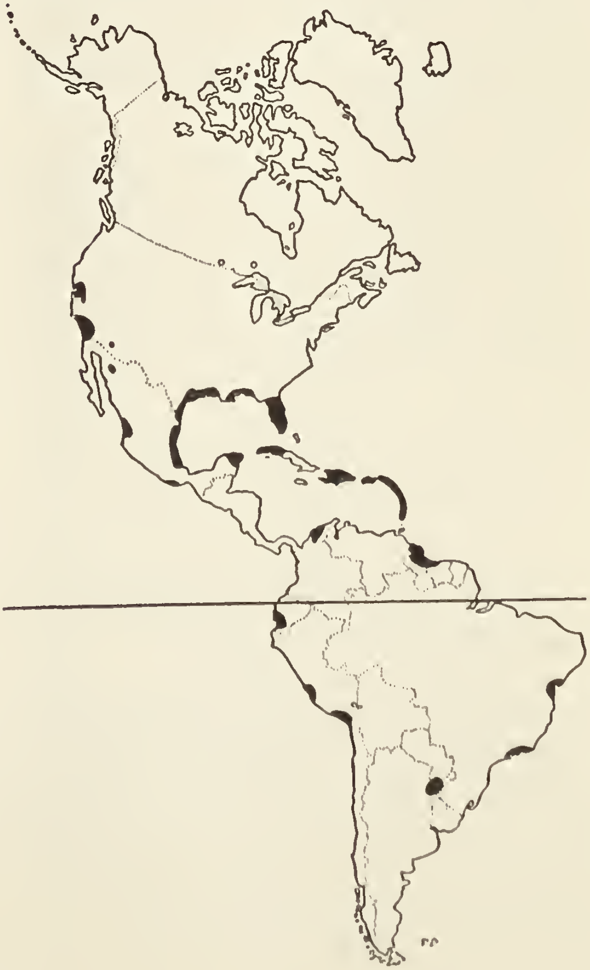
Salt Lake City and its neighbor, Ogden, are very good samples indeed of the many oasis towns in our Western States. As Brigham Young and his band of Mormon followers crossed the Rockies in 1847 and looked down on Salt Lake Valley, the leader said, "This is the place." His men built dams on streams that flowed down from the Wasatch Mountains to Great Salt Lake. The men led water through ditches to the thirsty land. Salt Lake City has prospered. Today these garden lands between the mountain and the desert grow the good Utah celery and other vegetables. They grow berries, and other fruits, sugar beets, and other crops. Salt Lake City, Ogden, and Provo are Utah's leading cities. There you will find oil refineries, plants for canning and quick freezing of fruits and vegetables, stockyards, flour mills, and plants for the drying of salt from the waters of the lake.

Thousands of visitors stop over to see Great Salt Lake and bathe in it. If you look at the alfalfa map, the potato map, and the sugar beet map, you will understand why we say that these are oasis cities, as are Greeley and Fort Collins, Colorado; Pocatello, Idaho; Missoula, Montana; and Roswell, New Mexico. Pueblo, Colorado, is both an oasis town and a smelter town.

1. Where does your family buy the supplies it needs? Is your town or city a trading center? What kinds of stores would there be in a trading center for a fruit-growing region? A ranching area? A mining area?

2. Find each of the following cities on a map. Tell why they are called oasis cities. Why are they near the mountains?
   a. Salt Lake City, Ogden, and Provo in Utah

What climatic facts go with citrus fruit production?



b. Greeley and Fort Collins, Colorado
c. Pocatello, Idaho
d. Missoula, Montana

The Western States in the future. As you grow to be men and women, the Western States will be growing also and in many different ways. You know that every new dam built in a western stream means new crops in the dry lands. You know that dams may mean cheap electricity to drive factory machinery, to quick freeze valley crops for hundreds of thousands of food lockers in stores and homes.

Even now your family may own a private food locker. Into it go meats, fish, fruits, and vegetables, all to be frozen as hard as wood. No more canning, or, at least, not as much! The family can have fresh strawberry shortcake and fresh asparagus for Christmas dinner if it likes.

If you live in the East, you will want to see the West. The West will always be a place to which millions will want to go on a pleasure journey. Who does not want to see the Grand Canyon, Death Valley, Yellowstone National Park, and giant trees? Hundreds of thousands of tourists do it every year now. Tourists will continue to visit the national parks, to climb their mountains, or just to live for a time in the great out-of-doors. If once you see the giant cactus and the amazing sunset colors of Arizona, you may want to see them again.

And don't forget the big man-made lakes back of the dams. If you like to fish, the lakes will offer you plenty of fish. If you like to sail boats, there is plenty of open water. If you like to swim, the water is clean and fresh. If you like to camp and pitch your tent, camping is free in many places.

Something to Do

1. Make a list of the 11 Western States you studied. With each state's name write the name of its capital city. Locate each capital on a map. Learn to write these names. Ask your teacher to dictate them to you as a test.
2. Select one of the capital cities to read about in a reference book. Tell the class about any important or interesting facts.
3. You may want to add to your notebook the names of Western States, their capitals, and one or two important things about each state.
4. Explain what we mean by a metropolitan district; a man-made oasis.
5. Discuss with your classmates these questions:
   a. Will more people come to live in the Western States?
   b. What resources does this part of our country have?
   c. Why are tourists from the East attracted to the West?
6. Tell all of the ways in which a western dam may be useful to people.

A Short Quiz

Match the names of the states and capitals:

1. Washington	a. Salem
2. Oregon	b. Salt Lake City
3. California	c. Santa Fe
4. Nevada	d. Carson City
5. Idaho	e. Helena
6. Montana	f. Denver
7. Wyoming	g. Olympia
8. Utah	h. Cheyenne
9. Colorado	i. Phoenix
10. New Mexico	j. Boise
11. Arizona	k. Sacramento

Stories You Will Enjoy

Penny for Luck by F. C. Means—Houghton
Peggy and Paula and Laddie by M. J. Carr —Crowell
Sheep Wagon Family by M. R. Richardson —McBride
Little Rose of the Mesa by Madeline Brandeis —Grosset
Golden Sleeve by A. D. Hewes—Doubleday
As the Crow Flies by Cornelia Lynde Meigs —Macmillan

Lumber, Citrus Fruits, and Sugar Beets

The lumber industry is the growing, manufacture, and distribution of the wood products of the forest. Lumbering is one of the leading industries in the Americas, chiefly in North America.

Men who understand quality of timber decide which trees are to be cut. They cut a notch or spray paint to mark the trees. Power-driven saws make quick work of felling the trees and revolving cranes load the logs on trucks. At the mill, huge saws and planers prepare the lumber for shipment to the consumers.

The artist shows some of the steps in the lumber industry on one of the following pages. You may want to read more about lumberjacks and saw mill workers so you can answer these questions: how do lumberjacks control the direction in which a tree is to fall? what work must be done from the time trees are felled until the logs can be taken from the forest? what are the methods of transporting logs to sawmills? why is kiln drying a step in lumber manufacturing? what are the principal uses of lumber?

The second panel in this group tells the picture story of citrus fruits. In areas of light rainfall, irrigation is necessary to provide water for orchards of these trees. Workers cultivate the soil and spray the trees and fruit to protect them from scale and other insects.

Pickers handle citrus fruits very carefully to avoid bruising them. The fruit is clipped from the branches, put into boxes, and taken to the packing house. Here it is sized by machines and packed by hand for market.

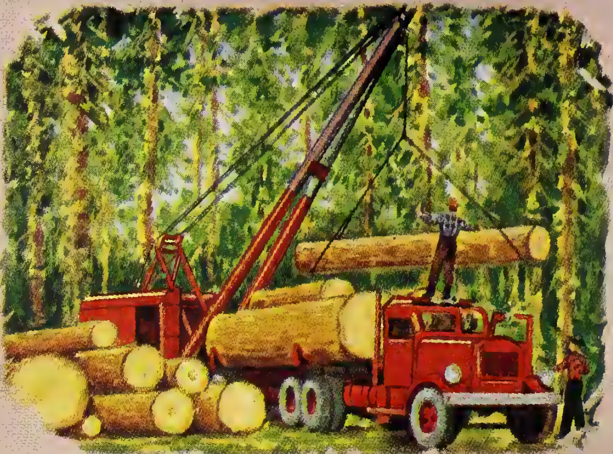
The oranges, grapefruit, and lemons you buy at your corner grocery store have come, no doubt, from California, Florida, or Texas. These states are America's principal growers of citrus fruits. Discuss the ways citrus fruit may travel from the orchard to your corner grocery store.

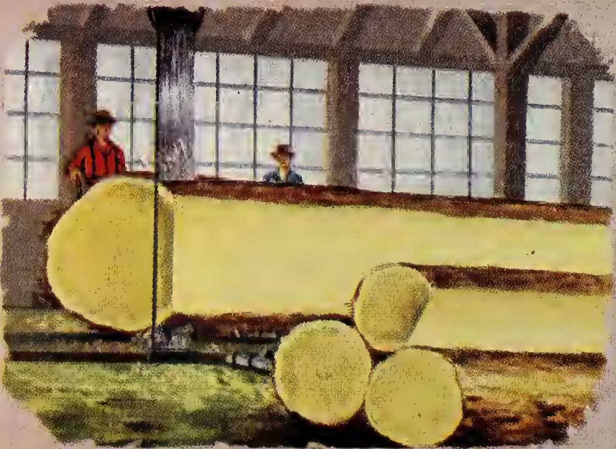
Another important product of our Western States is beet sugar. Beets grow best in areas that have temperatures near 70 degrees in summer, enough water—either rainfall or irrigation—and fertile soil. Since 35 per cent of the world's supply of sugar comes from beets, you can understand the importance of this crop.

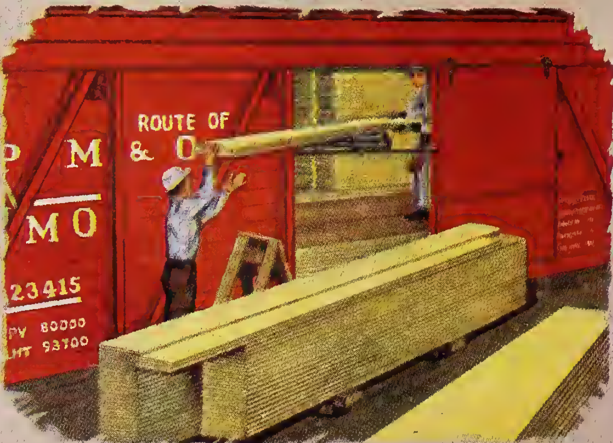
The artist's first sketch in the panel on beet sugar shows a machine thinning the beet plants. Why do you think the plants are thinned? In the other sketches the artist tells the story of irrigating the fields, harvesting and storing the crop, boiling the beet juice, and sacking the sugar.

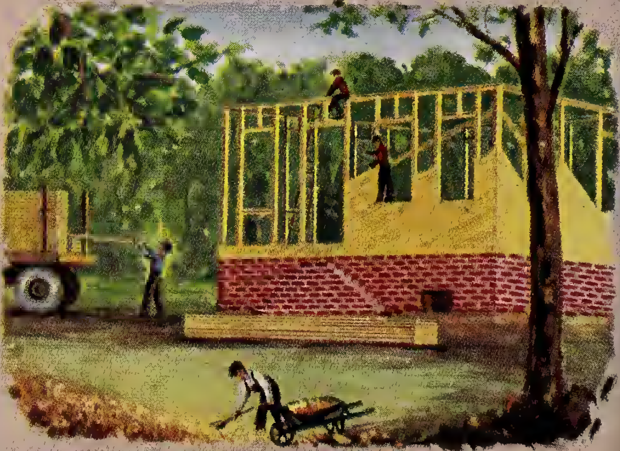
The sugar beet has by-products—beet tops, beet pulp, and molasses. Tops, pulp, and molasses are fed to sheep and cattle.

Lumber



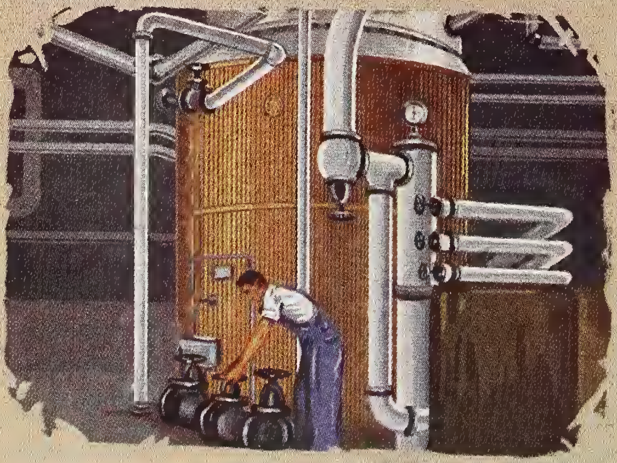






Citrus Fruits

Sugar Beets



Black Star (left), Philip Gendreau (right)

White sand and a hot sun—green mountains and cool breezes—these are scenes in the South.

Chapter 18

The Southern States

Many kinds of land and soil. We will study sixteen states that often are spoken of as the Southern States. These sixteen states have about three-fourths as much land as the eleven Western States, but they have three times as many people.

A rainfall map will give you a hint of the reason why the Southern States have more people than do the Western States. In the Southern States nearly all the land gets enough rain for crops or forests.

The map shows us that in western and northwestern Texas and Oklahoma there are high plains. Gradually the land slopes down from these high plains to the Mississippi River and to the Gulf of Mexico.

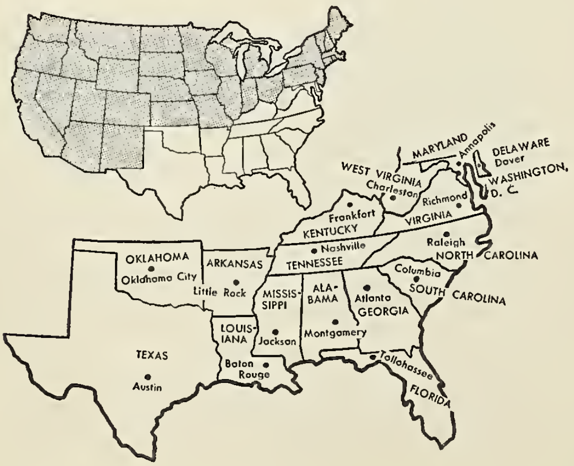
East of the Mississippi Valley the Appalachian Mountains and the Appalachian Plateau form another highland from which the land slopes to the Mississippi River, to the Gulf of Mexico, and to the Atlantic Ocean. Between these two main highlands is a lower upland—the Ozark Plateau and Ozark Mountains of Arkansas and Oklahoma.

The Great Smoky Mountains of western North Carolina and eastern Tennessee are the highest mountains east of the Mississippi River. Because they are so high, the weather here is cool enough for forests of spruce trees such as grow in Canada. Snow covers these mountains in winter.

1. Name three upland areas that form parts of the land in our Southern States.

Many kinds of climate. The climate of Florida is quite different from that of the Great Smokies in Carolina. A warm ocean current flows into the Gulf of Mexico from the Caribbean Sea and flows out between Florida, Cuba, and the Bahama Islands. This current surrounds Florida with warm water on three sides. In some winters the southern part of Florida has no frost at all. People are bathing in the warm ocean in January at the same time that boys and girls are skating and coasting in West Virginia, Maryland, and Delaware, and snow lies under the spruce trees on the Great Smoky Mountains.

West of the Mississippi we also find great differences in climate. The southern tip of Texas is a land of mild winter and orange groves. Eight hundred miles away, in the far northwest corner of Texas, the winter is so cold and the summer is so short that the farmers grow the crops of the North.



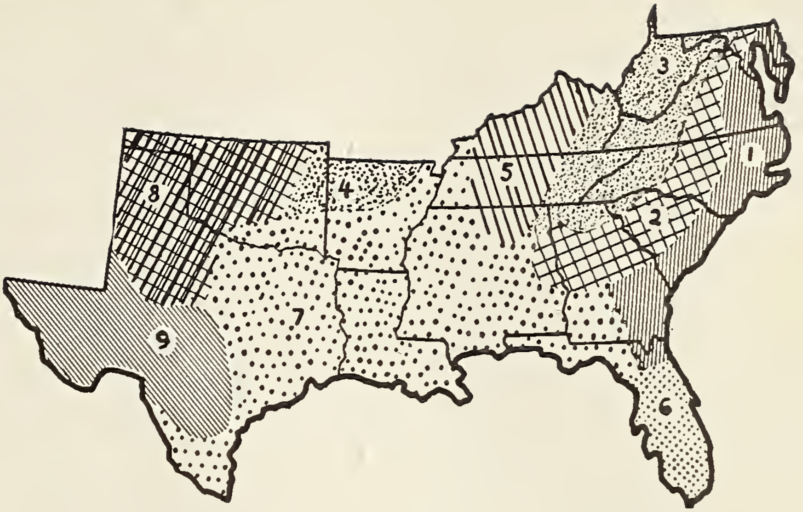
There are also great differences in climate between the eastern and western parts of the Southern States. There is so much rain that there are millions of acres of swamp on the level land, near the Atlantic Ocean, the Gulf of Mexico, and along the Mississippi River. It is very different in western Texas. A part of western Texas has so little rain that no streams reach the sea, and there are salt lakes like those in parts of the Great Basin.

The Mississippi Valley is low, level, and open to the north and also to the south. When the south wind blows, a dozen states have warm and sunny weather. When the north wind blows in winter, it sometimes brings freezing weather to the Gulf Coast. But the southern tip of Texas and southern Florida rarely get these freezes.

1. Use the climate map to help you understand the different kinds of climate in the Southern States.

Natural regions. These differences of land surface and climate show us how Nature has divided the Southern States into a number of natural regions. In the east we have the mountains, then the lower land around the mountains called the Piedmont. Farther to the east are the still lower lands by the sea called the coastal plain.

In the center of the Southern States, the great Mississippi River flows through the thousands of square miles of land that it has covered with its soft, rich mud. This is a very different kind of land from the sandy lands of the coastal plain, or the Ozark hills, or the high plains of western Texas and Oklahoma.



The natural regions of our Southern States are outlined and numbered on this drawing. Learn the region names and location to help you study the South.

1. South Atlantic Coastal Plain
2. Piedmont
3. Appalachian Highlands
4. Ozark—Ouachita Uplands
5. Tennessee and Ohio River Valleys
6. Florida Peninsula
7. Gulf Coastal Plain
8. Northwestern Plains and Prairies
9. West Texas Ranch Country

The following chapters tell you about each of the natural regions of our Southern States. You will learn what people do to make a living in the different regions.

Something to Do

1. Use a map to help you make a list of the sixteen Southern States and their capital cities.
2. Check the degrees of latitude between which the Southern States lie. Which state is in the northeast corner of the group? Which state is in the southwest corner?
3. What do you understand by the term "natural regions"? Discuss the term with your teacher.
4. Piedmont means "foot of the mountain." Trace the Piedmont on a map to understand that its name is appropriate.
5. Make your own physical map of the Southern States. Be sure to include all the natural regions in this area.
6. Review what you have learned about the effect of yearly rainfall on the use of land. Study the rainfall map and tell what you think is the use of the land in western Texas; in Delaware; in western North Carolina.

A Short Quiz

Copy from the next column the list of capital cities. With each one write the state's name.

1. Austin
2. Baton Rouge
3. Jackson
4. Little Rock
5. Nashville
6. Montgomery
7. Atlanta
8. Tallahassee
9. Columbia
10. Raleigh
11. Richmond
12. Charleston
13. Frankfort
14. Oklahoma City
15. Dover
16. Annapolis

Your breakfast grapefruit may have come from here. What states are large growers of citrus fruits?

Ewing Galloway

Black Star

More than 100 miles of waterfront help to make Baltimore important in shipping and industry.

Chapter 19

The South Atlantic Coastal Plain

The Fall Line. The waters of the ocean once covered that part of the Southern States that is near the Atlantic Ocean and near the Gulf of Mexico. When the water went away, much that was once sea bottom became a level plain whose soil is very sandy in many places. The rainfall is heavy, and much of the flat, level land near the sea has water standing on it part of the year. We call such places swamps. One of the swamps near Norfolk, Virginia, is called the Dismal Swamp.

Along much of the shore of the South Atlantic States are long sandy islands called barrier beaches. There is a bay—sometimes called a lagoon—between the barrier beach and the mainland. These bays are fine places for fish and oysters.

If you go up the James River in a boat, or up the Potomac River, or some other stream of the Atlantic Coastal Plain, you will pass many miles of riverbank made of sand and clay, but you will see no stones or rocks. The water of the river is quiet and deep. But you will come to a place where your boat will be stopped because there are rocks in the stream or river bed, and water is tumbling over the rocks.

Why are falls in the rivers? As the rivers flow toward the sea, they flow over the solid rock of the Piedmont, which here happens to lie near the surface. The streams wear this rock away very slowly. When the rivers reach the coastal plain, they flow across the soft earth of which the coastal plain is made, and the water easily cuts deep channels in the softer soil. The channels get deeper suddenly, as the rivers plunge from the hard rock at the edge of the Piedmont into the deep channel that has been cut in the soft soil of the coastal plain. There is a waterfall or rapids at this place in every large river of the Atlantic slope. Imagine that a line is drawn to connect these waterfalls. We call the line the fall line.

Boats of the explorers and early settlers going up the rivers had to be unloaded at the fall line, and goods were traded there. Towns naturally grew up at these unloading points, or trading places. They are called fall line cities.

1. Why have rivers cut channels in the coastal plain but not in the Piedmont?
2. Why did towns grow up along the fall line?

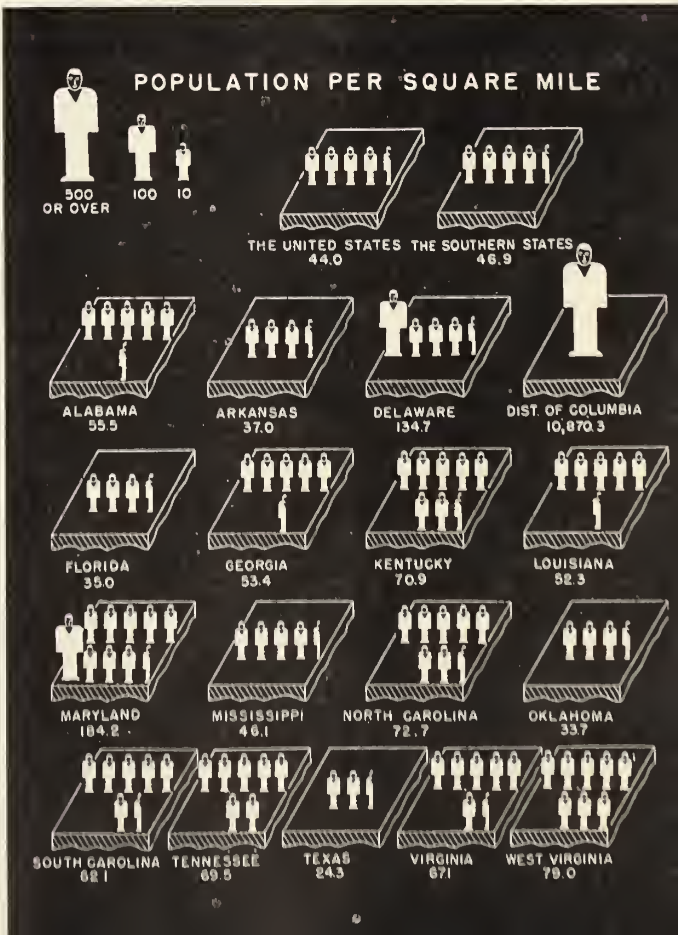
Cypress swamps. The whole of this coastal plain was once covered by forest. The people sold lumber and other forest products. Pine trees grew on the sandy land and cypress trees grew in the swamps. Cypress is a wonderful wood, good for making shingles, the interiors of houses, and for posts that will last a long time in the earth. Hard pine is an excellent wood, and useful for building.

Cut a gash in a pine tree, and a sticky liquid oozes out. This liquid smells like turpentine, because it is turpentine. As it comes from the tree the turpentine is mixed with another useful product, resin. Turpentine is used for paint and varnish; resin has many uses. The wrestler rubs resin on his shoes to keep from slipping while he is wrestling. The paper makers coat paper with resin to get a good finish that will take ink and show pictures well. For a long time the sale of turpentine and resin has been a very important industry in this section.

The paper makers could not get rid of the resin when they tried to make paper from the wood, but now a new process, called the Herty process, has been discovered, and paper mills in Charleston, Savannah, and other coast cities are using pine wood to make paper.

Trucks and trains can go almost anywhere on the level, sandy lands, except

Compare the population per square mile of the Southern States with that of the Western States. How does rainfall affect population distribution?



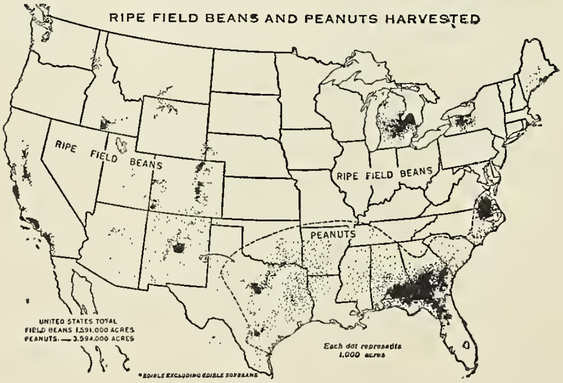
in the swamps, so lumbering is easy. Logs are often floated out of swamps at times of high water.

The march of the harvest. The coastal plain once had a much greater lumber industry than it now has. Much of the forest has been destroyed to make way for farms. After the trees are removed, the level, sandy soil is easily made ready for crops. Sandy land gets warm quickly in the first sunny days of spring. Sandy land suits vegetables—peas, beans, tomatoes, early potatoes, and melons. Spring comes earlier in the South Atlantic Coastal Plain than in the northern states. When the people in the North are planting their gardens in April and May, the people in North Carolina, South Carolina, and Georgia are harvesting their crops and shipping them north by train, truck, and boats.

Norfolk, Virginia, has an excellent harbor. Boats go from Norfolk to Washington and Baltimore in one night. In a day and a night, boats go to Philadelphia and New York, and in one more day, to Boston. Being able to send its products to northern cities by boat has made Norfolk a great shipping center for garden produce grown in southeastern Virginia and northeastern North Carolina.

Are peanuts grown in your home state? Which states produce large quantities of peanuts?

U.S. Dept. of Agriculture


RIPE FIELD BEANS AND PEANUTS HARVESTED
RIPE FIELD BEANS
RIPE FIELD BEANS
PEANUTS
UNITED STATES TOTAL
FIELD BEANS 1,591,000 ACRES
PEANUTS.— 3,594,000 ACRES
Each dot represents 1,000 acres
*EDIBLE EXCLUDING EDIBLE SOYBEANS

The time for harvesting early potatoes reaches the mouth of the Chesapeake Bay about the first of June, and passes on through eastern Virginia, eastern Maryland, and Delaware. The section of the plain between the Chesapeake Bay and the Atlantic Ocean and Delaware Bay is a part of three states. People call it the Delmarva Peninsula.

There are many canning factories in the Delmarva Peninsula towns. In summer thousands of people work in the factories, helping to can tomatoes, peas, beans, and other vegetables. These are sold in thousands of grocery stores in many states.

1. Give three reasons why the sandy land of the coastal plain is being used for crops.
2. The Delmarva Peninsula is made up of parts of three states. Write their names.

Broilers. In recent years, the Delmarva Peninsula has developed the important industry of raising chickens, a hundred million a year. The chickens, called broilers, are sent to market when they grow to four pounds. This business is almost like a manufacturing industry. The farmer buys carloads of grain from the North Central States and converts the grain into delicious meat by feeding it to chickens. Truckloads of broiler chickens leave Delmarva in the evening and in a few hours the chickens are in Philadelphia. They get to the New York market the next morning.

Peanuts. We are learning new ways of using peanuts, and the crop is increasing rapidly. Many peanuts are grown on the truck farms near Norfolk. The town of Suffolk claims that it is the "Peanut Capital" of the world. Suffolk has many large warehouses and factories that clean and grade peanuts and roast them. The peanuts are salted; some are made into peanut butter and into peanut candy. The pleasant odor of roasting peanuts fills half the streets of the town. It makes us feel hungry to walk through Suffolk. Many peanuts for butter, oil, and for pigs to eat are grown also in Georgia, Alabama, and Florida.

"King Cotton." Cotton is an important crop of the South Atlantic Coastal Plain. It is a much older industry than that of growing vegetables or peanuts. Cotton was important over a hundred years ago, before there were trucks or trains to carry vegetables to market and before people knew how to can food. In those days people said, "Cotton is King." Cotton is a wonderful crop for the farmer, because if made into a bale, cotton keeps well. Mice or rats will not gnaw into a bale of cotton, nor will moths eat it. Cotton does not get moldy; a shower of rain does not damage it. A bale of cotton is so big that no one can steal it easily. These reasons make it easy for a farmer to borrow money to pay his help to make a cotton crop. The farmer can repay the loan when he sells his cotton. For a long time many farmers in this part of the country grew nothing to sell but cotton. They sold cotton and bought everything else, except a little corn, which they grew to feed the mule and pigs.

But some years ago a new trouble for cotton came along—an insect, the cotton boll weevil, came to Texas from Mexico. The weevil traveled across the United States, biting holes in the boll and spoiling the cotton.

Because of the boll weevil, cotton is not so important in Georgia or South Carolina or North Carolina as it once was. Today farmers are growing more vegetables, fruit, and tobacco instead of so much cotton.

Black Star

The cypress tree of the South grows in or near water. Long Spanish moss often hangs from its strong branches. To some, this seems dismal.

1. Why have the cotton farmers in Georgia and the Carolinas turned to more mixed, or diversified, crop growing?

The oyster and the crab. In the Northlands chapters you learned something about the habits of the oyster. The oyster likes back bays where the water is neither too fresh nor too salty. Plenty of such bays lie behind the barrier beaches almost all the way from Delaware to Texas.

Chesapeake Bay is the largest bay. It has more oyster beds and grows more oysters than any other part of our long coastline—east or west. Chesapeake Bay makes Maryland and Virginia the leading oyster producing states.

Crabs are plentiful all along the Atlantic and Gulf coasts. But Chesapeake

Bay gives Maryland and Virginia the leadership in crabs.

A crab sheds its shell each year. While growing a new shell, the crab is called a soft-shelled crab—very tempting indeed to eat, fried to a crisp brown and served on toast.

The Continental Shelf. The sea is shallow along the Atlantic Coast and the Gulf Coast of the United States. You may go out from the coast for many miles before you come to a place where the ocean is 500 feet deep. Then in a few miles, its depth may become 5000 feet.

This shallow sea bottom near the shore is called the Continental Shelf. The Grand Banks are a part of the Continental Shelf. Fish come from the open sea to the Continental Shelf to feed and to lay eggs. Many of them are caught here. The Continental Shelf is a fine place for catching fish. The United States Bureau of Fisheries says that 62 different kinds of fish and a dozen kinds of shellfish are taken in these waters.

Each spring the shad swim from the sea into the bays, and go up the rivers to lay their eggs. Men have caught so many of these delicious fish that the catch is smaller than it was years ago.

The fishermen's nets bring in millions of pounds of croakers, mullet, mackerel, and sea trout from the open sea. But most of all they get menhaden. Indeed, two out of every three pounds of fish caught are menhaden.

"Never heard of it," you say. Probably not. Menhaden is not used much as a food fish. We think it has too many bones. The fish are steam cooked, and the fish oil is squeezed out. The rest of the fish, together with the bones, is dried and ground into meal for poultry feed, hog feed, and for fertilizer.

Schools of menhaden move slowly northward along the coast as the spring and summer advance. For a few weeks the boats can go out from ports in Florida and Georgia and come back loaded with menhaden. The boats must then move northward and take the fish to another factory to be cooked, pressed, dried, and ground. These useful factories are scattered along the coast from Florida to New England. Beaufort, North Carolina, is the leading menhaden center.

1. Since menhaden is not used much as a food, how does it help our food supply?

Sports and resorts. You remember that many water fowl come to the Northlands in summer. In winter millions of these wild geese, wild ducks, and other water fowl spend a few months in the rivers, swamps, and lagoons of the South Atlantic Coastal Plain. Also, there are many quail and other game birds in the thickets, fields, and open woods. Hundreds of sportsmen come from the northern cities for a vacation hunting birds and catching fish. Other persons spend some weeks in hotels near Augusta, Georgia; Aiken, South Carolina; and other places in the pine woods and on the islands along the sea coast. In summer, another group of people, this time from the inland South, come to the southern shores to bathe in the sea and to enjoy sea breezes which make the southern shores much cooler than the interior of the Southern States. Ocean City, Maryland, and Virginia Beach, near Norfolk, Virginia, are the largest of the southern shore resorts.

Bromine. There is a remarkable new industry on the coast of North Carolina. Not long ago, men found a way of getting a chemical called bromine from sea

Paul's Photos

It is a busy day on the Virginia coast when a buyer's boat visits the oyster beds. Fifty-five per cent of the supply of oysters in the United States are produced in cultivated oyster beds.

water. The first plant in the world for doing this is in North Carolina.

We might call this mining, but it is different from the kind of mining that we read about in the Western States. This kind of mine will not run out. We have about 300 million cubic miles of sea water, and there is a little bromine in every barrel of it.

When you see the words "Ethyl Gas" at a filling station, a little bromine is waiting there to help you along the road. Bromine is also in Mercurochrome and many other useful things. There are many other useful products in sea water, and we may learn how to get more of them.

Cities. The cities of the South Atlantic Coastal Plain are mainly port cities—Wilmington, Delaware; Baltimore, Maryland; Norfolk, Virginia; Charleston, South Carolina; and Savannah, Georgia. All of these cities export something. All receive shiploads of materials for shipment to interior points and for use in their waterfront factories, especially for fertilizer factories and sugar refineries.

At the north of this region, large ships reach Wilmington, Delaware, by way of the Delaware Bay and Delaware River. Wilmington makes leather goods, rubber hose, machinery, and many other products. But the city is best known for the manufacture of powder, dynamite, and an almost endless number of useful chemical products; nylon is one of these products. They are made from materials such as wood, coal, tar, sulphur, salt, air, and natural gas.

1. Why do you think the larger cities of the coastal plain are port cities and not inland cities?

Baltimore. Almost half of the number of people who live in Maryland live in the city of Baltimore. About 150 years ago, Baltimore builders built the ships called "Baltimore Clippers." There were no other ships at that time that sailed so fast. Maryland sailors took the clippers to the ports of every continent except Antarctica. The clippers that Baltimore builds today are seaplanes. These fly to China, the Philippines, and to other places in the Far East, as we call East Asia.

For a long time small vessels went up and down on the many arms of Chesapeake Bay. The small vessels stopped at many places to get the produce from scores of plantations and little towns. The boats took the produce to Baltimore, and that city became a great distributing center. Baltimore now has many industries, but its greatest industry is a very large iron, steel, and shipbuilding plant. The plant is located beside the harbor, where ships can easily unload ore from Cuba or South America. This plant makes steel plates for ships, radios, and telephones. Also many ships are built here. During World War II, Baltimore built and launched each week an ocean ship made of steel.

Baltimore is a favored place for manufacturing. It gets electric power from the Conowingo Dam on the Susquehanna River, near the head of Chesapeake Bay. Coal comes in easily from western Maryland and Pennsylvania. Fish and other food are brought by boat and truck from the Chesapeake country.

1. List three reasons why Baltimore is a good place for factories.

Norfolk. Norfolk has a splendid harbor called Hampton Roads, at the mouth of the James River. Many harbors can be entered only when the tide is high, but the largest ships of the world can sail right into Norfolk Harbor even at low tide. The United States Government made a great naval base here. Naval vessels are built, repaired, outfitted, and supplied with all that is needed for long voyages at sea.

There is much good coal in the Appalachian Plateau of western Virginia, West Virginia, western Maryland, and Pennsylvania. Railroads have been built from the coal fields to Norfolk. The road beds are graded so carefully that the coal trains run downhill most of the way to the water's edge at Norfolk. There a big machine picks up a car loaded with coal and dumps the coal into ships. It seems almost as easy as picking up a bowl of sugar and pouring out the sugar.

One wharf, or pier, on Hampton Roads can load three ships on each side of the pier at the same time, and 6,000 tons of coal can be dumped in an hour. Much coal goes from Norfolk to New England and to foreign countries. Tobacco and lumber are also important exports from the great harbor of Hampton Roads.

1. Use a map to help you name four states for which Norfolk is an important port.

Newport News—Charleston—Savannah. Newport News, on the other side of the mouth of the James River, is a part of the Norfolk Metropolitan District and has one of the largest yards in the world for building and repairing ships. Many new manufacturing plants have been built in the Norfolk area since the beginning of World War II.

Charleston, South Carolina, on a good harbor at the mouth of two rivers, has a United States Navy Yard, paper mills, oil refineries, and sugar refineries. There are beautiful gardens in Charleston.

Many of the gardens are around the homes of its people. In March and April, azaleas, wistarias, camellias, and other flowers are in bloom and make Charleston a fairyland of color, delightful with fun and the perfume of flowers. Thousands of tourists from the northern states come to visit the famous gardens of Charleston. The people open their gardens and show them to the visitors.

Savannah, seaport of Georgia, near the mouth of the Savannah River, exports more naval stores—turpentine, resin, and pine tar—than any other American city. At Savannah are shipyards, sugar refineries, and paper mills.

Something to Do

1. Discuss with your classmates the reasons why towns and cities grow up in certain areas, but not in others. Which of the reasons apply to your town or nearest city?

2. Read again the section in the Northlands that tells of lumbering in the forests. Compare the way in which lumbering is carried on in the Northlands with the work in the pine forests and cypress swamps in our Southern States.

3. Write a paragraph on the importance of the Delmarva Peninsula.

4. Review the story of producing oysters in Chapter 4.

5. Make a list of the kinds of fish you know something about. You may want to look for pictures of them.

6. Have you ever had a vacation in the country, the mountains, or along the shore? Write an interesting story about your vacation to read to the class.

7. Add pictures of clippers to your scrapbook.

8. Write your own definition or explanation of each of the following terms:

a. barrier beach
b. lagoon
c. waterfall
d. rapids
e. swamp
f. Fall Line
g. naval stores
h. diversified crops
i. bromine
j. Continental Shelf

A Short Quiz

Write the numbers of the true statements from the list below. Rewrite the false statements to make them correct.

1. The Grand Banks are a part of the Continental Shelf.

2. The chief use of mackerel is to make fertilizer meal.

3. Baltimore's harbor is at the mouth of the James River.

4. Naval stores are produced in areas that have sandy soil.

5. Turpentine comes from cypress swamps.

6. Chesapeake Bay is well known for its oyster beds.

7. There is a large government naval base at Norfolk.

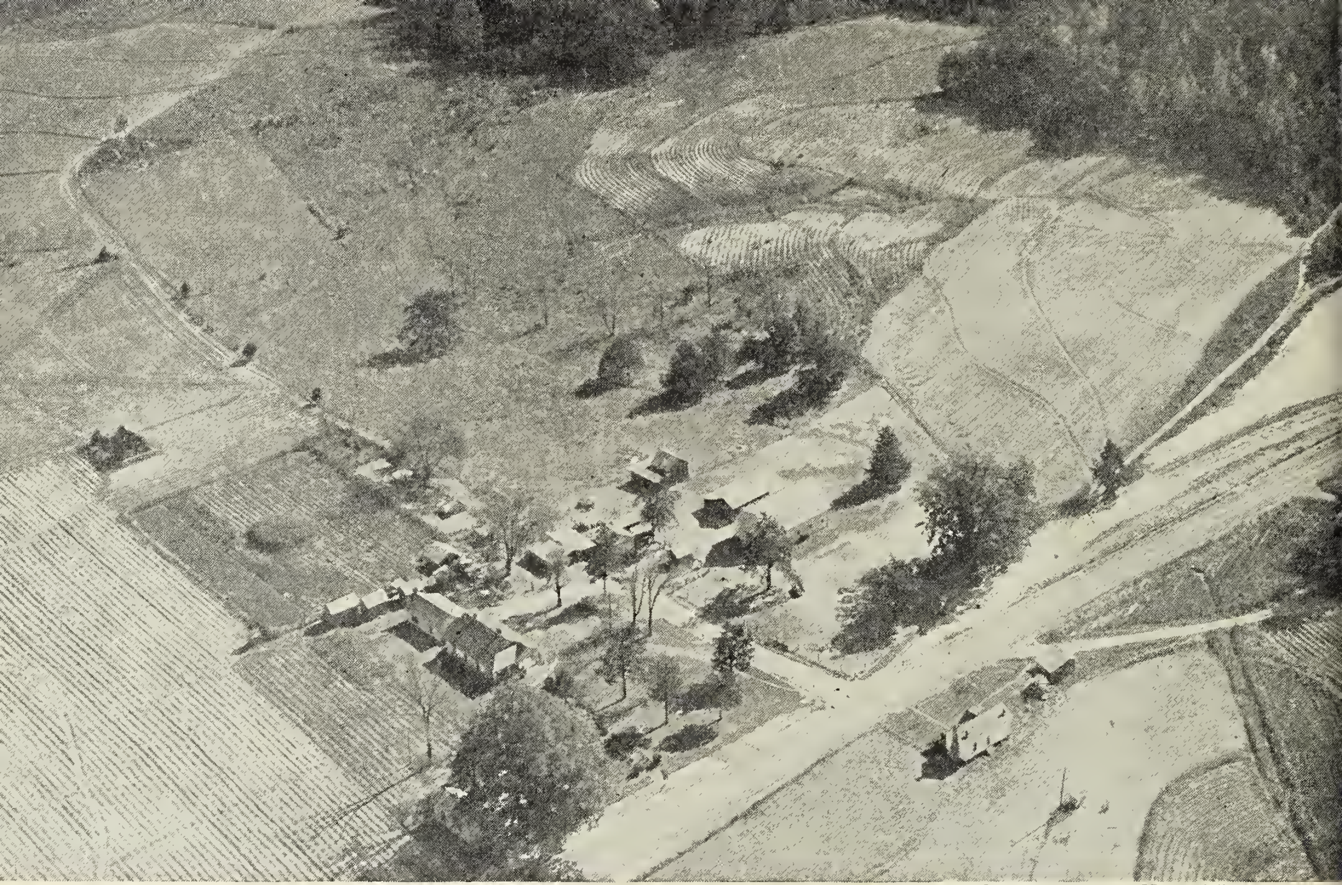
8. The harvest season for early potatoes comes earlier in Maryland than in Maine.

9. Bromine is one of the diversified crops of cotton farmers.

10. Parts of the Appalachian Plateau have beds of good coal.

This was once a good farm. Now it is abandoned because conservation was not practiced.

Soil Conservation Service



North Carolina State News Office

This shows soil conservation. Ditches along the edge of strips let surplus water flow slowly to the edge of the field and go down grass-covered waterways.

Chapter 20

The Piedmont

Piedmont soil. In an automobile you pass from the South Atlantic Coastal Plain to the Piedmont region. You may not be sure about the exact mile at which you pass from the sandy coastal plain to the clay soil of the Piedmont. Soon after you have gone a few miles into the Piedmont from the coastal plain, the car will begin to go uphill and then downhill. The soil is different, too. Piedmont soil is clayey, not sandy. If there is a cut in the road, you see rocks in the bank of earth beside the road. When you cross a stream, the water is often tumbling over stones, babbling as it goes, not creeping silently along as do the sluggish streams of the coastal plain, where there are no stones in the stream bed.

The trees, too, tell you that you are in the Piedmont. You have left the pine trees of the sandy land and here you see the trees with broad leaves—oaks, hickories, ash, walnut, but especially oak trees.

1. What are the important natural differences between the South Atlantic Coastal Plain and the Piedmont?

A land of grass and livestock. The clay soil of the Piedmont suits grass and so does the rainfall. You see many horses and dairy cows eating grass in fields that have fences around them. If you are north of the James River, you will find that most of the land is fenced instead of being without fences, as are most of the fields in the coastal plain. Here and there you see a dairy barn near a neat farmhouse. A great many dairy farms are needed to supply milk for more than two million people in the metropolitan districts of Washington and Baltimore. The farther north you go in the Piedmont, the more numerous are the dairy farms.

1. Give two reasons why the Piedmont is a land of dairy farms.

Tobacco. You will see three different kinds of farming on the Piedmont. In addition to the dairy and livestock farming of the northern Piedmont, you will find tobacco farming in southern Virginia and in North Carolina. Thousands of the farmers who live here get most of their money from a few acres of tobacco. A few acres of tobacco bring as much income as many acres in corn, pasture, and hay on the dairy farm. Much more work is needed to take care of an acre of tobacco than is necessary to take care of an acre of land on a dairy farm.

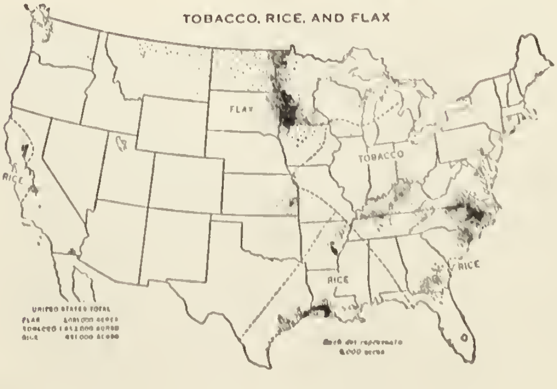
The tobacco plants are started in seed beds and then planted, one by one, in the field. The growing plants must be hoed and cultivated to keep down the weeds. The worms must be picked off many times. The blossoms must be picked many times to keep the plant from going to seed. Finally each leaf is picked and carefully fastened on a long stick with many other leaves. The stick is hung in a barn called a curing barn. Curing means drying the tobacco so that it will keep and not spoil. Some kinds are cured by heating in barns kept very warm by means of wood fires.

After the tobacco is cured, the grower takes it to a tobacco auction, where it is sold by a man called an auctioneer.

A crowd of men follows the auctioneer as he goes from one pile of tobacco leaves to the next pile. Some of the men are farmers whose tobacco is being sold, and some are buyers from other states in the United States or even from countries across the seas. The auctioneer seems almost to be singing, as he tells the good points of the pile of tobacco before him. He calls for bids. He talks so fast that you would not understand him, but the buyers do. A buyer nods, which means, "I will pay the price you are asking." The auctioneer and the crowd move to the next pile. Sometimes an auctioneer sells as many as four piles a minute and some years a hundred million pounds of tobacco have been sold in the auctions of Winston-Salem, N. C. Auctions are held in Wilson and other North Carolina towns, at South Boston and Danville, Virginia, and many smaller places in the tobacco-growing regions.

Which states are the chief tobacco producers? Name the South's rice-growing states.

U.S. Dept. of Agriculture



Norfolk and Western Railway

Cabbages from southwest Virginia travel in refrigerator cars to metropolitan areas.

One in every three pounds of tobacco used in the world is grown in the United States. North Carolina, Kentucky, Virginia, South Carolina, and Tennessee are among the leaders in tobacco-growing states.

1. Compare the income from tobacco with other farm crops in North Carolina, Kentucky, and Virginia. Use an encyclopedia.

Cotton. South of the tobacco belt cotton farming is the third kind of Piedmont farming. Cotton is the most important Piedmont crop in South Carolina, Georgia, and on into Alabama. Many cotton farmers also grow some corn to feed to their mules, pigs, and perhaps some chickens.

Row crops. This Piedmont region is fortunate in having three important crops—corn, cotton, and tobacco. All are valuable crops. But in making the crops something very unfortunate often happens; something happens that causes the farmers to lose their land and destroys a part of our country. As you know, these three crops—corn, cotton, and tobacco—are planted in rows. As the plants are growing, the earth between the rows must be cultivated to kill the weeds. Cultivation also keeps the earth soft and loose. Thunderstorms come often at this season. The rain dashes down and hits the loose, soft earth. The water carries some of the soil away. Thus cultivation of crops in rows has helped to destroy thousands of farms in the Southern States and especially on the Piedmont.

1. Study carefully the picture showing the destruction caused by rains in fields planted in rows. How can conservation be practiced to overcome this destruction?

Peaches. Many peaches are grown in the Piedmont section of North Carolina and South Carolina and Georgia. One county near Spartanburg, South Carolina, has more than a million peach trees.

In July the peaches on the trees in the northern states are still small and green. Then peaches from these three southern states are for sale in thousands of cities, towns, and villages throughout a dozen states where peaches are not yet ripe. The hills of the southern Piedmont give air drainage, and in March a traveler may see hill after hill made beautiful by the blossoms of the peach trees. In July workers are busy picking peaches. Other workers are in the packing houses, grading peaches and packing them for market. Every day carloads and carloads of peaches are rushed north by express train. One year South Carolina shipped a carload of peaches every three minutes for a week.

1. Review your understanding of air drainage. How does it affect the production of fruit in the southern Piedmont?

Fall Line cities. At the eastern edge of the Piedmont where it meets the coastal plain, is a row of cities. These cities between the coastal plain and the Piedmont actually belong to both regions.

The Fall Line location has two advantages for a town. When they had reached this place, boats could go no farther upstream. The boats had to stop and were unloaded. This made a natural place for a trading post or store. For this reason, Fall Line settlements became trading centers. They traded with the coastal plain and with the Piedmont, too, and grew to be towns and cities.

The waterfall gave these places another advantage—the power of water wheels to run the machinery of mills. Thus Fall Line towns and cities became manufacturing centers. These cities are Washington, D. C.; Fredericksburg, Richmond, and Petersburg, Virginia; Raleigh, North Carolina; Columbia, South Carolina; Augusta, Macon, and Columbus, Georgia.

Before there were railroads, steamboats went up and down the river, carrying produce to most of the cities. Soil washed from the fields has put mud banks and sand bars in many of the rivers so that the steamboats have long since disappeared. Richmond and Washington, the largest of the Fall Line cities, still have boat traffic. Washington has more people than all the other Fall Line cities together and for one reason—Washington is the capital of the United States.

Washington is not in any state. It is in the District of Columbia, a piece of land given by the State of Maryland for the capital of our country. The city was named for George Washington.

Richmond, the capital of Virginia, is larger than any three Fall Line cities to the south of it. It is 91 miles from the seaport of Norfolk, and still has boat traffic. It is really a seaport, for a channel with water 25 feet deep lets ocean ships come to Richmond. The ships bring Cuban sugar to the sugar refineries at Richmond and Scandinavian wood pulp to mills that make paper and cellophane.

The huge tobacco factories of the city make more cigarettes than are made in any other city—one-third of all the American output. Its rivals in this industry are Winston-Salem and Durham, not far away in the North Carolina Piedmont.

Raleigh and Columbia are state capitals, and also industrial cities. All the Fall Line cities have water power and mills that make cotton cloth or rayon. Columbia also has furniture factories and factories that use clay, as does Macon, Georgia.

The South has one of the world's largest towel factories. Why have spindles marched south?

Bill Sharpe

Cities on the Piedmont. The Piedmont region has a string of towns on the Piedmont itself. Suppose your helicopter stopped over Greenville, South Carolina. You would look down on the largest mill under one roof in the United States. In this one cotton mill are 100,000 or more spindles. The spindles turn rapidly and twist cotton linters into thread. In this huge cotton mill there are 2500 looms that can weave 60,000,000 yards of cotton cloth in a year. But the mill at Greenville is not the only cotton mill. Suppose you fly in a circle that is 100 miles in diameter. The circle has Greenville for its center. When your helicopter has flown around the circle that is 100 miles across, it will have gone around nearly 500 cotton mills.

"Why so many cotton mills in this Piedmont part of the Carolinas and Georgia?" Well, many of the cotton mills were brought here from New England, and there is a reason for that, too.

The spindles march south. For many years the South grew cotton, but sent it to New England to be made into cotton yarn—the thread of which shirts, dresses, and other garments are made. But after a while, the mill owners began to think it would be better if the mills were situated near the cotton-growing area, and where cotton is plentiful and cheap. The streams that come tumbling out of the Appalachians provide cheap water power for running the machines. There is much good water power because the rainfall is heavy at all seasons of the year. Also, as the manufacturers knew, many persons who live in the mountains or work on the cotton and tobacco farms wanted to earn money by working in the mills. Also the cost of homes for workers and the cost of heating them is less here than in the colder North.

So the spindles began to march south. Today North Carolina has more spindles making cotton and rayon yarns than any other state. South Carolina and Georgia are also among the leaders in this field.

Georgia, Alabama, South Carolina, and Tennessee earn more money from the manufacture of cotton and rayon textiles than from any other product. In Virginia and North Carolina textiles are second only to the tobacco products.

Northward from Greenville is Spartanburg, South Carolina, with cotton mills; Charlotte, North Carolina, has forty textile mills, one of which uses five hundred bales of cotton a day. Greensboro, North Carolina, weaves rayon and cotton and has the largest factory in the world for making overalls. Charlotte, another textile town, is the largest city in North Carolina. Lynchburg and Danville, Virginia, also have cotton mills, and Charlottesville, Virginia, has the University of Virginia. Frederick, Maryland, a thriving town, is a supply center for nearby dairy farms on the rolling Piedmont hills.

Atlanta. At the southern end of the Piedmont string of cities is Atlanta, the highest—1050 feet—large city in the United States except Denver, Colorado. Atlanta is also the largest city of the South not served by boats. Atlanta has many branch offices, stores, and factories of businesses that have their main offices in other cities. The main offices ship goods to Atlanta to be sent out to the Southeastern States. Therefore, we say Atlanta is an important distributing center.

1. Write your own definition of the term "textiles."
2. What effect does the location of Atlanta have on its weather?

High Point and a group of industries. High Point, North Carolina, has an important hosiery industry, and is the leading furniture manufacturing town of the South. High Point shows us how industries start and how different industries help one another. Some of the early settlers were Scotch cabinet makers, English iron workers, and Irish weavers. The town was started in a forest and it is near the mountains that are the natural home of trees whose wood is good for making furniture.

In 1946 about three thousand people worked in the furniture factories and nearly as many more in the following helper industries:

Mattresses, box springs, pillows; machinery, band saws; frames, knobs, mill supplies, wood turnings, stocks, bobbin heads; sandpaper; metal stampings, hinges, hardware, tacks, casters, springs; cotton batting, pads, wood wool, excelsior, cotton felt, curled hair, moss; cotton goods, leather, linen chintz, all kinds of upholsteries; gelatin, glue, cement, adhesives, tapes, coated abrasives; varnishes, lacquers, stains, wood fillers and finishes, paints, enamels, veneer sizing; carved moldings, wood carvings, veneers, plywood, thin panels; sharpening stones and wheels; paper, twine, and furniture covers; lumber; mirrors, windows, glass, glass furniture.

Nearly every important industry in any city has a lot of helper industries clustered around it. We have not space to mention them all, but you may be sure that almost every industry that we do mention has helper industries.

Something to Do

1. Explain why most of the land north of the James River is fenced while most of the coastal plain fields are without fences.

2. Complete this sentence: Three kinds of farming done on the Piedmont are ______.

3. Make your own drawing to show the area in the Piedmont in which each of the three kinds of farming is practiced.

4. Discuss with your classmates the importance of Washington, D. C., to our country. A bulletin board display of pictures and information on the government will be an interesting project.

5. Choose one of the Fall Line or one of the Piedmont cities to read about in a reference. Make a report to the class on your research.

6. The terms "spindles," "linters," and "looms" are used in speaking of cotton mills. Look for information on the manufacture of cotton cloth and write a short account of the work in cotton mills.

7. Explain how the heavy rainfall at all seasons has helped to make the "spindles march south."

8. Select an important industry in your nearest city and make a list of helper industries such as has been made for the furniture industry.

A Short Quiz

Complete the sentences by choosing the correct term or phrase from the parentheses.

1. Many of the trees in the Piedmont are (pines, oaks, palms).

2. (Diversified or mixed farming, specialized farming, truck farming) is the type chiefly carried on in the Piedmont.

3. Planting row crops helps to (destroy, conserve, cultivate) topsoil.

4. (Richmond, Greenville, Atlanta) is a leading city in tobacco products.

5. Boat traffic is (lighter, heavier, equal to) train traffic to the Fall Line cities.

6. Our nation's capital is located in (Maryland, Virginia, the District of Columbia).

7. The name Piedmont means (high mountains, foothills, plateau).

8. Water power in the Southern States is (not used, little used, very important).

9. Georgia is well known for its crop of (peaches, tobacco, wheat).

10. Textiles are (paper products, woven goods, mill supplies).

11. Millions of pounds of (cotton, rice, tobacco) are sold each year in Winston-Salem.

Black Star

A split-rail fence frames this scene of spring in the beautiful Shenandoah Valley.

Chapter 21

Uplands and Valleys

The Appalachian Highlands. The Southern States have the southern part of the eastern highlands of North America. This southern upland area extends more than 500 miles from the southern boundary of Pennsylvania to northern Alabama, where it ends. In many places the upland is 200 miles wide. Nature divides this upland, or highland, as it is called, into three parts:

1. The eastern part is the Blue Ridge Mountain of Maryland and Virginia and the Great Smoky Mountains of North Carolina and Tennessee.
2. The western part is the Appalachian Plateau, with its rich coal fields.
3. Between these two is a long valley, the Great Appalachian Valley, which is often called the Great Valley. To the west of the Great Valley are many ridges with small, narrow valleys between them. This part is often called the Ridge and Valley section.

1. Use a physical or natural regions map to help you locate the divisions of the Appalachian Highlands.

The Blue Ridge and the Great Smokies. In Maryland and Virginia the Blue Ridge Mountain is in most places only a single, rather narrow ridge. In some places your automobile can cross it on a good road in fifteen minutes or half an hour.

In central and southern Virginia, the Blue Ridge widens, has many spurs and sometimes several ridges, with valleys between. In western North Carolina and eastern Tennessee the name changes to Great Smokies. This is a mass of ridges, peaks, and high valleys. It is many miles wide. The highest part is Mt. Mitchell, more than a mile above the sea, the highest land anywhere in North America east of the Mississippi River.

This long region of steep land has a climate that is wholesome, with plenty of rain to make forest trees grow, but it is not an easy place to make a living by farming. Lumbering is the chief use to which this mountain land can be put. Also there are some orchards of apples and peaches. Now that the automobile and good roads have made travel easier, the Blue Ridge and the Great Smokies are used more and more as summer resorts.

Asheville, N. C., is the center of a region to which thousands of people come in summer. They come from the warmer lands near the Atlantic and near the Gulf of Mexico, and from the lower Mississippi Valley.

To help us enjoy this beautiful mountain country, the United States government has made large national parks. In northern Virginia, the Shenandoah National Park has a splendid road along the top of the Blue Ridge. The road is called the "Skyline Drive," and gives magnificent views of the valleys to the west and the Piedmont to the east. There are also two large national parks in the Great Smokies. These wonderful parks are nearer to many millions of our people than are the beautiful parks of the western mountains. Sometime you must try to see them.

1. What are the chief uses of the land in the Blue Ridge and Great Smokies?

The Appalachian Ridges and the Plateau. We are driving westward from Hagerstown, Maryland. Our automobile soon begins to climb as the road winds up the side of a forested mountain, and then winds down the other side. We cross a narrow valley, then up and down the sides of another mountain—up and down—up and down across the forested ridges we go. This ridge and valley section is beautiful and good for growing timber, though poor for farming and hard to travel across.

We see long trains of cars filled with coal going east, and trains going west with empty cars. We come to Cumberland, Maryland, a town busy with iron works, machine shops, and clay industries. Beyond Cumberland is a high mountain. We climb it and are surprised to find this mountain has only one side. We have come to the top of the Appalachian Plateau. The land that lies before us is a plateau, not more mountains. The "mountain" we have just climbed to get there is called the Allegheny front. It makes the edge of the plateau and it extends for long distances both north and south.

The rocks of the plateau lie like the leaves of a book that lies on a table. The rocks are almost level. Under and between the rocks are layers of coal, coal seams we call them, many thousands of square miles of coal, good coal.

In some places streams have cut little valleys into the plateau. The streams have cut through the coal seams, which outcrop in the sides of the hills. This makes the easiest coal mining in the world—just dig into the side of the hill and there is the coal. Dig into the seam, lay a small track for the coal cars, dig coal, and haul it out of the hillside.

Our automobile is going across the Appalachian Plateau now. There is forest on both sides of the road. Then at a turn in the road we see a village or small town in the valley below you. It is a coal miners' village. There are hundreds of them in western Maryland, West Virginia, western Virginia, Kentucky, Tennessee, and even in Alabama. The coal the miners dig goes east to Norfolk and Baltimore and on by boat to New England. Coal goes by train to inland cities and to Canada, by barges down the Ohio and the Mississippi to New Orleans. Some article made by power from this bituminous coal is to be found in every house in the land.

Coal — the "black diamond." The state of West Virginia is said to have the richest bed of good bituminous coal on earth. More of this good soft coal is found on the Appalachian Plateau southward into Virginia, Kentucky, Tennessee, and Alabama, and northward into Maryland and Pennsylvania. Indeed, the three states—West Virginia, Pennsylvania, Kentucky—mine much more than half of all the bituminous coal we use or sell to other countries.

By-products of coal. Much coal is used in making iron. In order to melt one ton of iron from its ore, about 1½ tons of coal must be burned, but not in the form of coal. Before coal is used to melt iron ore, the coal is heated in an oven, a coke oven, without any air to let the coal burn. The coal gets red hot and gives off what you might call "smoke." The part that remains is called coke. Coke is much harder than coal. Coke is burned in the furnace that melts the iron.

The "smoke" that goes away from the coke oven has a foul odor, but it is rich in useful things. It contains coal gas, oil, ammonia, and tar.

Much of the coal gas is burned to keep the coke ovens going. The chemist gets the rest of it. The oil from the coal is used for making rubber, paints, and varnishes. And we also get TNT from this coal oil.

TNT has one use—it explodes—and with terrible force. If men need to break up some big rocks in a quarry, or blow down the side of a mountain, a few sticks of TNT will do the job.

Ammonia, another product from the coke oven gas, is used in washing clothes and for other household cleaning purposes. But one of the most important of all uses of ammonia is for fertilizer. Just think! Out of a few chunks of black coal you can get something to clean your clothes and to make the garden bloom!

And what a chemist can do with a little coal tar is one of the wonders of the world. He makes moth balls and saccharin, a white powder 300 to 400 times as sweet as sugar. He makes headache tablets and many medicines—the useful sulfa drugs that help so many sick people. From black coal tar, the chemist makes hundreds of dyes for clothes and hundreds of other things useful to everybody. The part that is left over is the pitch-black sticky material used to cover roofs.

Now you know why coal is sometimes called "black diamonds."

The Allegheny Plateau is a very useful region of rough land. We should be careful not to waste the coal. We should take care of the forests to give us wood. The Allegheny Plateau has an important lumber industry and it should keep on producing wood.

1. Name the two chief products of the Appalachian Plateau.

The Ridge and Valley Section. The Great Valley is an open road through the highlands between the Blue Ridge and the plateau. You may travel by railway or good highway from Birmingham, Alabama, at the southern end, to New York State at the northern end. Almost every mile of the way you will see mountains to left and mountains to right.

Most of the time you will be passing good farms much like those of the northern Piedmont. The rocks in most parts of the Valley are limestone, which makes rich land and good farms.

Wherever a railway comes out of the plateau and crosses the valley, there you will find a small city, with factories using wood and coal and iron from the plateau and cotton that comes up from the South. Beginning at the boundary of Pennsylvania, these towns are Hagerstown, Maryland; Martinsburg, West Virginia; Winchester, Staunton, Roanoke, and Bristol, Virginia; Knoxville and Chattanooga, Tennessee; and Birmingham, Alabama, last and largest of the Great Valley towns.

There are many apple orchards near Winchester, Virginia, and Martinsburg, West Virginia. These cities ship hundreds of thousands of bushels of fruit and have all the supply industries needed for this special business.

Roanoke has iron smelters, Chattanooga is a cotton manufacturing center, and Birmingham is the most important iron manufacturing city in the South. Birmingham has iron ore, coal, and limestone, the three chief materials for making iron, and it has them closer together than any other important iron center in the world.

Alabama State Chamber of Commerce

A small electric locomotive helps to move coke from the quenching station to the wharf. Coke is used in blast furnaces.

1. Locate each of the Great Valley towns of the Southern States. Name the rivers that drain the Great Valley.

The Tennessee and the Ohio River Valleys

Rolling land. Start at the top of the Great Smoky Mountains in North Carolina and go eastward, and you will climb down the mountains, cross the rolling Piedmont and the flat Atlantic Coastal Plain to the Atlantic Ocean. If, instead of going eastward, you go to the west, you will climb down the mountains, cross the Great Valley, cross the plateau, and then cross hilly land much like the Piedmont. Finally you will come to the low mud lands of the Mississippi flood plain.

The Ohio River and the branches of the Ohio, including the Tennessee River, drain most of the land that lies between the Great Smokies and the Mississippi and Ohio rivers. These parts of Kentucky, Tennessee, and Alabama have rainfall and growing seasons much like those of the Piedmont to the east of the mountains. There is the same winter with snow, cold wave, and freeze, followed in a few days by south winds, thaw, and rain. This is very different from the winters of steady cold we read about in Canada.

Since this rolling land west of the highland is so much like the rolling Piedmont to the east of the highland, in surface, soil, and weather, man makes much the same use of the land in both areas. Like the Piedmont, it is a land of farms, corn fields, hay fields, and pasture—a land of beef cattle, dairy cattle, horses and mules, and, in some places, tobacco.

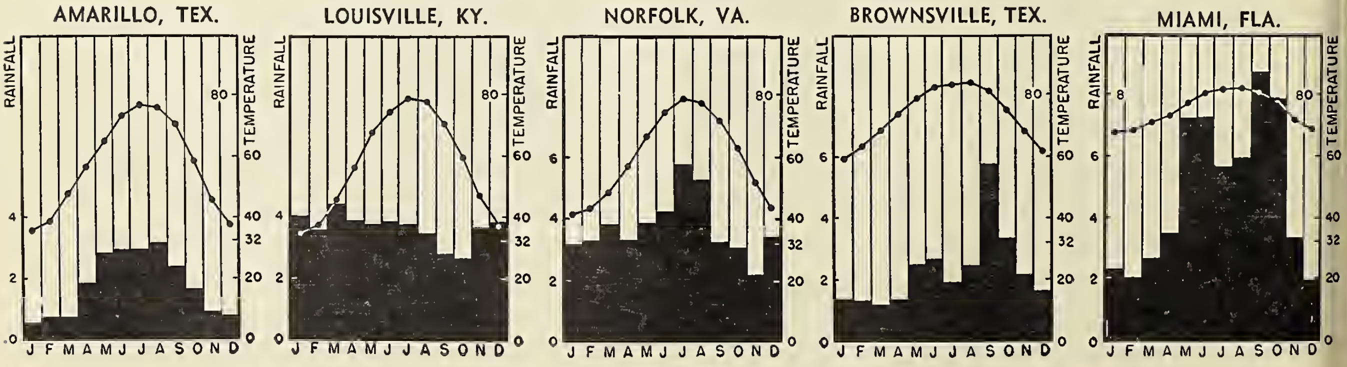
Kentucky and Tennessee have no sandy coastal plain, as do Virginia and North Carolina, so Kentucky and Tennessee have more grass and more cattle than do Virginia and North Carolina. A larger part of their land is good for hogs, and for sheep, and for dairy cows. They do not, however, have any area with so many dairy farms as the Piedmont section of Maryland, the section close to Baltimore and Washington. Because there are not so many cities in Kentucky and Tennessee, some of their milk is made into condensed milk. And because these states have a smaller proportion of their people engaged in manufacturing, farming is more important to them than to the people of the Piedmont.

Cotton at the southern end. The extreme southern part of the Tennessee Valley in Alabama has a growing season long enough for cotton. Cotton is an important money crop there.

1. What are the chief differences or contrasts in the use of the rolling lands east and west of the highlands?

The Kentucky Blue Grass Region. This rolling land west of the highland has two small areas of extra fine soil with surface nearly level. One area, often spoken of as the Kentucky Blue Grass, is a nearly level plain of several thousand square miles, with Lexington as its most important town.

Compare the July temperatures of these cities of the South. Two cities have a temperature range of less than 25° during the year. What are they? Compare the September rainfall of Miami and Norfolk. What effect do temperature and rainfall have on farm crops?



The rocks beneath this plain are limestone. Soils made rich by the decay of limestone make the Great Appalachian Valley a well-known section of good farms in each of the several states through which the valley passes. In the same way, the Kentucky Blue Grass region is famous and well known in many states. This rich soil suits tobacco, but it is especially good for a pasture grass called Blue Grass. The lime that plants get from the rich limestone soils makes strong bones in the men who eat the food that grows upon it, as well as in the animals that eat the grass there.

The Kentucky Blue Grass region is famous for its fine horses. Many of the race horses of the United States are bred here and some of the most famous horse races in the country are held here. Lexington might be called the Race Horse Capital of the United States.

The Nashville Basin. Nashville, the capital of Tennessee, is near the center of the Nashville Basin. This is another limestone plain, like the Kentucky Blue Grass, and like the Great Appalachian Valley. It is an excellent land for farms. Nashville has three important occupations—making rayon, the government of Tennessee, and education. There are eight colleges and universities in or near the city.

The TVA. In many parts of the Tennessee Valley, as also in many other parts of our country, land that was a fine forest a hundred years ago has been made into farms. But the farms have been ruined and abandoned because of soil erosion. The water, rushing quickly away from the steep hill fields, cut gullies that ruined the fields and choked the river channels with the mud and sand. The floods have been getting higher and higher as the years pass.

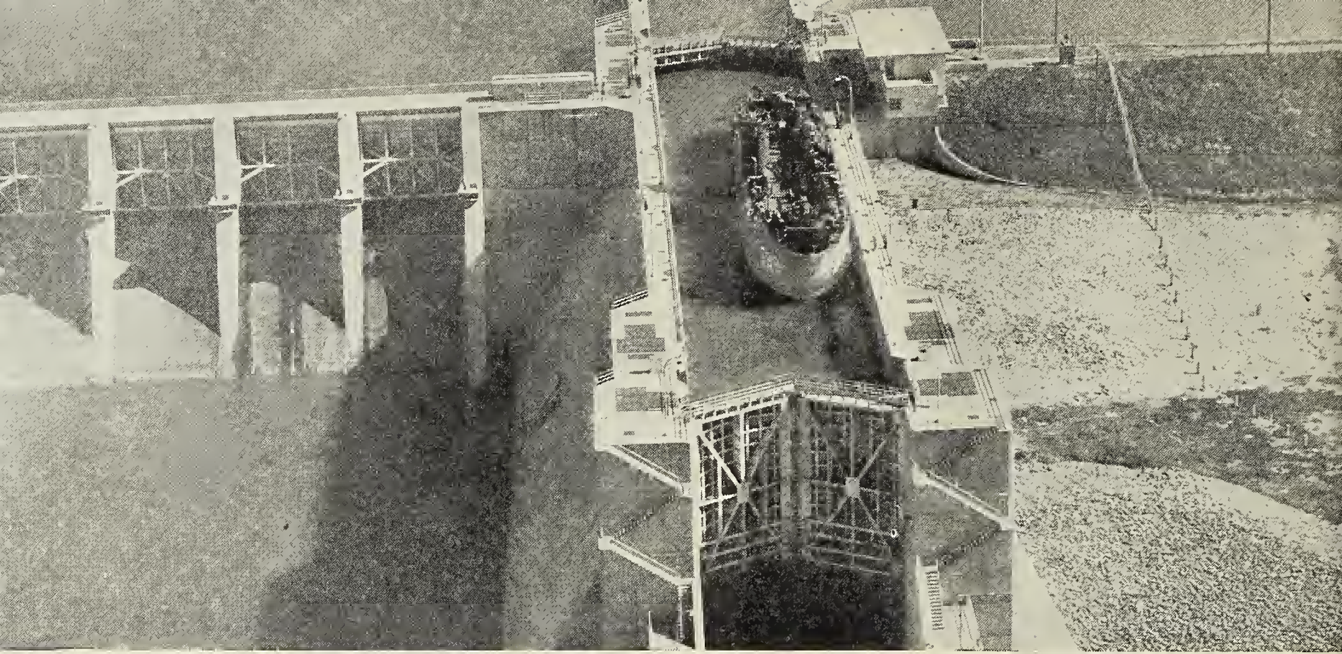
Ewing Galloway

Thoroughbred horses enjoy a nap. Why is the Kentucky Blue Grass region good for pasture?

The Tennessee Valley Authority is one answer to this problem. The TVA, as it is called, is a special new kind of government agency which deals with certain conditions of the land drained by the Tennessee River, no matter what state the land may be in.

The TVA has tamed the river by building 26 large dams. The dams hold back the flood waters, so that now at low water, the river carries six times as much water as it did before these reservoirs were built. There is a power plant beside each of the 26 dams—nearly 2,000,000 horsepower altogether.

The cheap power is sold to the people. More than 160,000 rural families use the power—most of them are farmers. Some of the power is used to make fertilizer to help farmers. Many things are being done to check the washing away of the farm lands and to keep the dams from filling with mud. Tennessee Valley farmers are not growing so much corn and



Tennessee Valley Authority

A boat passes through the lock at Fort Loudon Dam on the Tennessee River. Fort Loudon Dam is one of nine TVA dams on the Tennessee which make a useful waterway from the Ohio River to Knoxville.

cotton on hilly land as they did a few years ago. They have reduced the acres but increased the crop. In ten years, the cotton yield per acre went from 205 pounds to 350 pounds.

The dams on the river make a channel for boats to go all the way up to Knoxville. People of the Tennessee Valley are much pleased. They say it is a better place in which to live than before the TVA was created by act of Congress. The people of Europe and other countries are much interested in the new experiment. They think they may be trying the same plan some day. People in other valleys in the United States are asking that they, too, may have a river control and a valley plan.

The two great waterways—the Ohio River and the Tennessee River, hold this region in their grip almost as ice tongs hold a chunk of ice. Boats can now go from Pittsburgh or New Orleans to the mouth of the Tennessee River and on up to Knoxville. This is a great help to industries of Knoxville, Chattanooga, Huntsville, and Florence, Alabama, and all other towns on the Tennessee River or near it.

Louisville, served by boats on the Ohio, is the largest city in this region. Perhaps your baseball bat was made in Louisville. It makes more bats than any other town. Also it makes handles of hickory wood for all kinds of tools. This happens naturally because hickory wood grows on the Appalachian Mountains and on the rich lands of the Ohio and Tennessee valleys. Louisville is also the market for much tobacco and for distilled liquors.

1. Use a map to help you name the places to which boats from Knoxville can carry goods. How does this river transportation help industries in these cities?

The Ozark-Ouachita Uplands

Ozark uplands. Long ago most of the land between the eastern highlands of North America and the western highlands was under a great inland sea. The

Philip Gendreau

Asheville, North Carolina, is a gateway city to the Great Smoky National Park. Asheville's factories produce rayon yarn, blankets, textiles, and wood products. This city is also a tourist center.

bottom of the sea was raised up very slowly. Finally the sea bottom became land. Layers of sand that had been sea bottom became sandstone, layers of shells became limestone, layers of clay became shale rocks. But this new land was not level in all parts. In the part we now call the Ozarks, a wide dome many miles across was raised up almost half a mile at its highest part. This made a huge bulge in the new raised land.

Streams began to cut valleys in this uplifted land. Some of the valleys are a thousand feet deep. The carving and cutting by streams has made the Ozarks a rough, hilly country. Because here is plenty of rain, the land was covered with forest when white settlers came. For a hundred years it has been a land with many steep little mountain farms, much like those in Appalachia. It is much like some parts of the Appalachian Plateau, except that it does not have layers of coal under it. There is mining of aluminum ore at the eastern edge in Arkansas, and there are important zinc mines at the western edge in Oklahoma, but on the whole, this land is not rich in minerals.

The hill farmers grow corn and a little cotton. Recently there has been an increase in dairying.

Near Fayetteville, Arkansas, in the northwestern part, there are high, wide, level uplands between deep valleys. On frosty nights, the cold air slides into the valleys. This air drainage is good for fruit, and many strawberries, peaches, and apples are grown.

1. Compare the mineral deposits in the Appalachians with those of the Ozarks.
2. Besides farming, what industry could be developed on this high, tree-clad land?

The Ouachita ridges. South of the Red River the rocks got pressed into ridges much like the Appalachian ridges. These ridges are the Ouachita Mountains, 60 by 200 miles. Here in Hot Springs National Park, with its 47 hot springs, is the great health and pleasure resort of Hot Springs, Arkansas. The whole of the Ozark and Ouachita uplands is good for forest. The Arkansas State Forestry Commission says that two-thirds of the state of Arkansas is in forest and should be kept permanently in forest. Millions of acres of poor farms and fire damaged forest have been bought by the United States Government to become national forests.

The little town of Crossett, in the Ouachitas, shows the way to use this land. In the 400,000 acres controlled by the wise men of Crossett, the old plan of "cut out and get out" has not been used. No treetops are left lying around to make forest fires. Instead, the cutover land is carefully cleared and replanted. Because the seedling trees are spaced properly, twelve-year-old trees are as large as forty-year-old trees in other areas where the timber is crowded together.

At the mill in Crossett, small pieces of wood are sent to the local box factory. The smallest sticks are sold to toymakers. Rough slabs and short, broken pieces are turned into berry crates. Narrow strips are made into ironing-boards. Scraps of waste are turned into charcoal in the wood distillery, and saps from the trees and oils and acids are recovered and sold.

When Crossett has worked on a tree, virtually nothing is left of it. Everything has been used or is sold.

What is happening at Crossett might well happen in the Ozark Uplands and in nearly all parts of the United States. Perhaps it will, when more people are affected by the high price of lumber.

1. Locate the Ozark and the Ouachita uplands on a map.
2. Explain why two-thirds of Arkansas is in forest.

Something to Do

1. Look for pictures of the mountain resorts and national parks in the Great Smokies. Add them to your scrapbook or use them to make a bulletin board display.
2. Explain the term "Allegheny front."
3. Make a list of six or more by-products of coal.
4. Discuss the fruit grower's business and its helper or supply industries. Can you name five or more helper industries?
5. Name the three chief materials used in making iron. Why has Birmingham, Alabama, become the largest city in the Great Valley?
6. Write a paragraph comparing the Piedmont with the land between the Great Smokies and the Ohio and Mississippi rivers.
7. Explain why Lexington, Kentucky, is sometimes called the Race Horse Capital.
8. Name two areas in Kentucky and Tennessee that prove limestone deposits help to make rich soil.
9. Prepare a talk to give the class on the benefits of the TVA.
10. You may want to look for information on the reasons for the hot springs in Arkansas.

A Short Quiz

In the following sentences the facts are true, but the reasons given are false. Write the facts and give the correct reason for each.

1. Lumbering is the chief use of the Blue Ridge and Great Smoky mountain land because furniture factories are located here.
2. Conservation of forests and coal is necessary because trees are beautiful and coal has many by-products.
3. Birmingham is an important iron center because it is in the center of Alabama.
4. Farming is important to the people in Kentucky and Tennessee because of their large population centers.
5. Boats can now travel from New Orleans to Knoxville because industries need the materials the boats bring to Knoxville.
6. The Appalachian Plateau is really not a high level plain because it is made up of steep mountains.
7. Farmers in the Nashville Basin depend on livestock for a money crop because they do not like to grow cotton.

Philip Gendreau

The businesses of government and education, and industries dealing with lumber are important in Tallahassee. Besides being Florida's capital city, Tallahassee is the county seat for Leon County.

Chapter 22

Florida Peninsula and Gulf Coastal Plain

The Florida Peninsula. The Florida Peninsula is as long as the distance from Washington, D. C., to Albany, N. Y.—400 miles. In some places, the Florida Peninsula is 140 miles wide. No part of it is more than 300 feet above sea level and, like other parts of the coastal plain, Florida was once sea bottom. Its soil is made mostly of sand. In many parts layers of limestone, made of sea shells, lie under the sand. This limestone dissolves in rain water and that leaves holes and ponds and lakes on the surface, or passages are made beneath the surface and underground streams run there. In large areas of the peninsula there are no surface streams, but here and there huge springs send out enough water to make small rivers upon which boats can float.

The rainfall is enough for forests, and pine trees grow on sandy land. Much of the state is so level as to be swampy, and the cypress tree grows in the swamps.

In the southern part of the state is the Everglades, a large swamp covered by tall grass. Beside it is the "Great Cypress Swamp." For a long time,

Standard Oil Company of N. J.

Cypress swamps and oil wells are neighbors in this area. Name some uses of cypress lumber.

cypress lumber, pine lumber, and naval stores were the chief exports of Florida. The state had its greatest lumber production in 1916, but the trade declined and the people had to find other ways of earning money.

You wouldn't expect this sandy land to be good for grass, or hay, or wheat, or corn, would you? No, but there was something else the people could do to earn money after their trade in lumber began to decline. They could put a lot of fertilizer on the sandy soil to feed the vegetables and fruit trees the people planted.

The warm weather and the rain helped, too. More and more of these crops were planted, and fruits and vegetables were sent from Florida to the colder parts of our country. This was possible because by this time there were railroads with express trains to carry them. Thus, railroads and their express trains, together with the discovery of fertilizer, have given the people of Florida a chance to make money from the important new crops of fruit and vegetables.

1. Over how many degrees of latitude does Florida extend?
2. Name a Western State with approximately the same latitude as Florida. Compare the climate of these two states.

Phosphate rock. Florida is fortunate in having its own supply of fertilizer—phosphate rock. Without phosphate we starve! Plants must have phosphate to grow, and all animals and people live either on plants or animals or on both. Florida phosphate rock is in the form of pebbles that contain the remains of sharks' teeth, whale ribs, crocodile jaws, and whatever is left of millions of little sea animals. These things have become what is called fossils and have turned into lime phosphate from which we get phosphorus. This phosphate rock, scarcest of all the important plant foods, is found in a strip of sand beds 100 miles long in southwestern Florida.

Phosphate rock is shipped by boat from Tampa, St. Marks, and Fernandina to every important port in the United States. In some years a 5,000 ton shipload goes out every other day to fertilize the farms of Europe and Asia. Florida produces nearly a fourth of the world's phosphate rock. Is it any wonder it has fruit and vegetables to sell?

Oranges and grapefruit. In Central Florida are many beautiful clear lakes with groves of dark green orange trees beside the lakes or between the lakes. Even when a cold north wind blows with air having a temperature of 28 or 30 degrees, the water of the lakes may have a temperature of 50 or 55 degrees. This water warms the north winds a little and thus protects the orange groves of the Lake District from some of the bad effects of cold weather. Thousands of carloads of oranges go to the northern states every winter. Some of the Florida citrus fruit growers have large plantings of grapefruit. Florida and Texas are close rivals for first place in grapefruit, as Florida and California are rivals in oranges.

Early vegetables. In addition to citrus fruits, Florida, with the help of fast trains and airplanes, sends early vegetables to market. Near Sanford, in northeast Florida, are thousands of acres of black, peat soil, made of decayed grass and grass roots that grew beside a lake. This is splendid soil for celery. Sanford claims to be the greatest celery shipping town in the world. Several thousand carloads go north every winter.

Near the mouth of the St. Johns River at Hastings is a great potato center. Nearly all of the potatoes have been sent to market by the end of May.

The town of Plant City, near Tampa, is a great strawberry shipping center. Florida leads in strawberry shipments in February.

At the edge of the Everglades, near Palm Beach and Miami, are peat lands where the truck farmers grow beans. The bean farmer grows two crops of beans on the same ground between December and May. But he must put a ton of expensive fertilizer on each acre with each planting of beans.

Every winter many thousands of carloads of vegetables go north. It is sometimes said partly in jest, but also partly in truth, that a trainload of millionaires going south for a vacation will have to sit on a side track, waiting for a trainload of cabbages and beans that are rushing north, to pass.

Philip Gendreau

This Ponderosa lemon is quite a handful! There are more than 21 varieties of lemons.

South Florida ships vegetables in the coldest months of winter. Then central Florida begins, then Savannah, Georgia, and then Charleston, as the harvest moves up the coast.

Sugar plantations on a large tract of mucky land on the south shore of Lake Okeechobee are growing many thousands of tons of sugar cane each year. Not long ago this place was covered by marsh grass, taller than you are.

1. What kind of soil is best for celery?
2. Why do you think sugar cane is grown on the south shore of Lake Okeechobee?

Tourists. The American people have learned something from the birds. For thousands and thousands of years, millions of ducks, geese, and other water fowl have made a long journey each spring to the Northland. In the fall the birds return to the marshes along the coasts of South Atlantic and the Gulf of Mexico to spend the winter months in a warm and sunny climate. Now that we have railways and good highways, people from Boston, New York, Philadelphia, Chicago, and thousands of other places leave the snowstorms and cold winds of their home towns and, like the birds, seek the sunshine of Florida. Tens of thousands of people go by airplane, boat, train, and automobile. Thousands of cars, some with trailers, head southward as do ducks and other fowl.

While the snow is flying and the roads are sometimes blocked with drifts in the North, these human birds of passage may be bathing in the warm waters beside the Gulf Stream, sunning themselves on the beach, fishing, playing golf, pitching horseshoes, or just sitting in the sun. They are having a vacation—getting ready to tackle the work again when they return to their Northland homes. We say the tourist is the best crop Florida has because he brings more money to the people of Florida than they get from fruit and vegetables combined.

Florida visitors enjoy the thrill of a sailboat.

Philip Gendreau

The chief tourist centers are Palm Beach, Miami, St. Petersburg, and Orlando. The tourist boom increased the population of Miami nearly five times between 1920 and 1940. Hotels of steel and concrete, ten or fifteen stories tall, are waiting for people who have lots of money to spend. There are many less expensive hotels, boarding houses, restaurants, cottages, and apartments. And there are trailer camps for those who bring trailers.

Factories in Florida. Florida has no coal, no oil, no waterfalls to run factory wheels, and there is not yet much manufacturing, and, therefore, the state has no large cities.

Jacksonville, at the mouth of the St. Johns River, is the largest city. It is a distributing center, with many railroads that go north, west, and south. It is a seaport, and sends shipments of lumber, naval stores, and fruit to American ports and to lands across the sea.

Tampa is a distributing center and port of the southwest coast of Florida. Tampa is also the chief place in the United States for the manufacture of "Havana" cigars, made of Cuban tobacco. Many of the cigar makers are Cuban people. Some of them first came from Cuba to work in Key West, a town on an island surrounded by warm water, and the only place in the United States that has no record of a frost.

Philip Gendreau

We look across Biscayne Bay at Miami's skyline. Miami is sometimes called the "Magic City" because of its rapid growth. Why does Miami have many hotels?

The northern third of Florida has a new industry—the tung tree, whose fruit yields tung oil. Tung oil is the best of all the oils for making paint. For years we have imported tung oil from China, but tung orchards have now been planted widely in Florida, Georgia, Alabama, Mississippi, Louisiana, in a belt about 100 miles wide along the Gulf of Mexico. Florida has a tung oil mill at Gainesville. This is a promising new industry.

1. What products does Florida supply to other states and countries?

The Gulf Coastal Plain. The Gulf Coastal Plain is a continuation of the Atlantic Coastal Plain. The two were made in the same way. The soil is sandy over most of the area, but we shall see that some parts of the Gulf Plain have soil that is very different from the sand of old sea bottoms. You have already learned how warm wind and cold wind chase each other up and down this plain in winter.

The rainfall map will tell you that the climate is not the same in all parts. One part has more than 60 inches of rain in a year. That means a lot of swampy land if the land is flat, or damp, mountain forests if it is high. Another part has less than 20 inches of rain.

1. Check a map to locate the Atlantic Coastal Plain and the Gulf Coastal Plain.

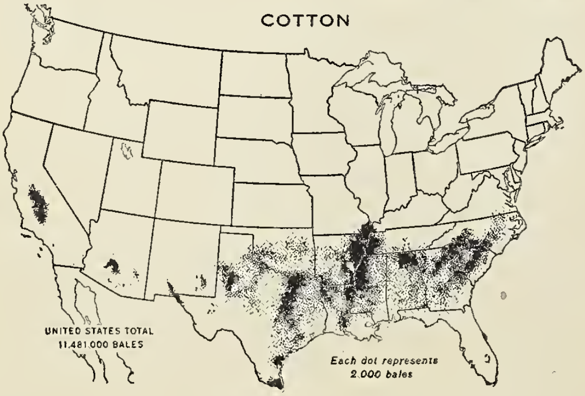
The Lower Rio Grande Valley. The people of Eagle Pass, Texas, a city of 6,000 on the Rio Grande, toss their hats into the air on April first and take part in a grand celebration. For four days the holiday lasts—with fiestas, parades, beauty contests, dances by visiting Indians from Oklahoma and Mexico, and climaxed with bull fights in the friendly Mexican city of Piedras Negras, across the river.

Why such jubilation? The celebration marks the completion of a canal and a hydro-electric plant. Water will now transform their arid desert into luxurious gardens. On the high side of the canal there is now, and still will be, nothing but cacti, grass, and brush. Below the canal, less than a stone's throw away, will be spinach, strawberries, sugar beets. The climate—270 days each year without frost—permits several crops annually. From the same land seven to nine cuttings of alfalfa can be taken; two crops of corn can be grown. Sixty-six thousand acres can be irrigated by gravity while an additional 25,000 acres can be irrigated by low-lift pumping. Their Quemado Valley will no longer be the

1941 Yearbook of Agriculture, Climate and Cotton

"burned" valley, as the Spanish name implies.

The land around Brownsville, at the mouth of the Rio Grande, also needs to be irrigated. This land was cattle ranches in 1904. When the railroad gave chance for quick shipment, the people discovered that it was a good place to grow winter vegetables, oranges, and grapefruit, and they set out to rival Florida by growing these things. These industries succeeded and have increased rapidly.


COTTON
UNITED STATES TOTAL 11,481,000 BALES
Each dot represents 2,000 bales

U.S. Dept. of Agriculture

It is January and the farmers of the southern tip of Texas are plowing, working in their fields, and taking their crops to the packing houses. On this same day the school children in Kansas City, Minneapolis, Detroit, Chicago, and hundreds of other places, are playing in the snow. But these children can take home fresh vegetables from the store—vegetables that come from the warm, sunny land beside the lower Rio Grande.

Something is harvested there every month of the year. Vegetables begin in October with beans, and then come beets, carrots, spinach, cabbage, onions, thousands of carloads of them. The season for sending Brownsville vegetables to market ends with tomatoes in May and early June. Cotton is picked from July to September.

This winter garden region of Texas has no fear of frost for eleven months in the year. The people say it is the place "where summer spends the winter."

The part that can be irrigated is not so large as Delaware, and without irrigation there would be no garden crops, no oranges, no grapefruit, nothing but cattle ranches. Corpus Christi has recently become a great shipper of vegetables that are grown there without irrigation.

The Brownsville people are planting oranges and they are rivals of Florida in grapefruit. Indeed, the Texas grapefruit industry has grown so fast that Texas and Florida in 1944 each shipped about 22,000 carloads.

1. What crops are harvested in the Brownsville area during the fall, winter, spring, and summer seasons?

The Cotton Belt. From east side to west side, the Gulf Coastal Plain is a land of farms. But if you rode across eastern Texas, southeastern Arkansas, Louisiana, Mississippi, Alabama, and southwestern Georgia, you might say, "This part of our country is mostly woods, but there are not many big trees." It is true that less than one-third of the land in any of these states is in fields or crops. The rest is in woods. This part of the country was the leading lumber producer years ago, but most of the woodland has been cut and then burned over so that in many places only a few trees are left. Most of the farmers on this plain grow corn and almost everywhere the farmers also grow cotton. For many years this area has been called a part of the Cotton Belt. In east central Texas is a large area that grows much cotton. If you drove across it you would see that the soil is very dark and looks rich. "Black Prairie," the people who live there call it.

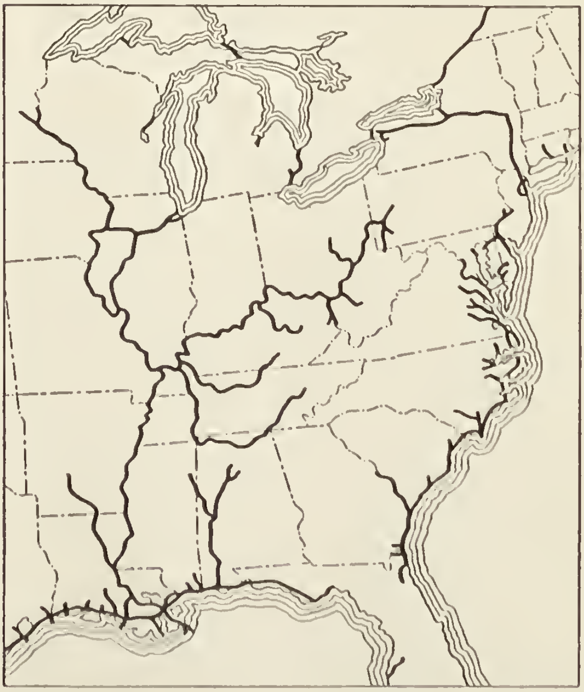
This black soil is very rich. If you examine a bank of earth beside the road, you will find the black soil on top, but a few feet from the top you will find white chalk. The chalk is much like chalk you use on a blackboard. Chalk is really a soft limestone, made of the bodies of countless little animals that lived in the sea, died, and sank to the bottom, long, long ago. Chalky limestone makes a soil that is rich in plant food. Because many, many plant roots have decayed there, the soil has turned from white to black. This is splendid farmland, and its crops have helped to make a string of distributing center cities—Dallas, Fort Worth, Austin, and San Antonio.

1. Check the map of cotton production areas. Trace the Cotton Belt.
2. What relationship is there between limestone soil and the cities of Dallas, Fort Worth, Austin, and San Antonio?

Alluvial land. The cotton map shows much cotton along the Mississippi and its two western branches, the Arkansas River and the Red River. From time to time these three streams have floods and muddy water spreads for miles across the level valleys. The mud settles and covers the land with a layer of rich, soft earth. We say that such land is alluvial land. The Mississippi River has spread mud and built up alluvial soil from southern Illinois to the Gulf of Mexico. This rich, soft, fine alluvial soil covers an area about ten times as large as the state of Delaware; it covers parts of six states. Little Rock, Arkansas, got its name because it has the first rock to be seen as one comes up the river from the Gulf of Mexico.

This alluvial land is fertilized by every flood. Good crops of cotton can be grown on the same field year after year. For more than a hundred years steamboats

Waterways are important in transporting raw materials and manufactured products. Here are waterways with channels more than 6 feet deep.



Butler Airphotos, Inc.

New Orleans is one of the South's metropolitan districts. Located on the east bank of the Mississippi, it is the main gateway to the heart of North America.

have carried cotton down the Mississippi to New Orleans, the gateway to the Mississippi Valley.

Most of the alluvial land is still in swamps and forests. This is the natural home of the muskrat, and trappers catch them by the million. These swamps are one of the great fur regions of North America.

1. Use a physical-political map to trace the route of a steamboat down the Mississippi River to New Orleans.

The boll weevil. In the days before the boll weevil came many a Cotton Belt farmer grew a field of cotton, and a field of corn to feed his work mules and pigs. He sold the cotton and bought almost everything, sometimes even hay for the mules. The boll weevil made trouble for these one-crop farmers. By 1922, the weevil had spread over all of the Cotton Belt and was busy each year spoiling cotton worth 200 million dollars.

"We will starve these rascal weevils," said the farmers. "We won't plant cotton. The weevils won't have cotton to eat and they will die." In many neighborhoods in Georgia, Alabama, Mississippi, Louisiana, and Texas, farmers planted corn in a field one year, peanuts or cowpeas the second year, and cotton the third year. Some farmers planted corn and later sowed cowpeas between the rows. The second year they planted oats, harvested the crop, then put in peanuts. In the third year, they planted cotton. Those weevils got very hungry during the two years when there was no cotton.

And then those farmers had a pleasant surprise. In the fields where they had planted a different crop each year, they got a bigger and better crop of cotton when it was cotton's turn to be planted. The farmers got better crops of everything else, too.

The farmer who once grew only cotton now grows more crops—nitrogen-giving crops. The farmers said, "The boll weevil has taught us a great lesson. Because he spoiled our cotton, he forced us to learn how to use other crops. We will build a monument in honor of the boll weevil." And they did this in the town of Enterprise, Alabama.

The general farm comes to the South. The Cotton Belt farmer began to grow more feed crops—more oats, more hay, and more legumes. These crops gave him feed for animals. He bought a few cows and had milk and butter. He raised more hogs and more poultry and had more meat. Or, as he said—

"Cow, hog, and hen;
Little cotton now and then."

Many farmers in the southern part of the Cotton Belt have a way of making the pigs do most of the work of harvesting the crops. There is so little winter weather that something is growing nearly all the time. The farmer grows a number of crops and lets the pigs walk about the fields and harvest them by eating the crops in the field. In winter it is oats or barley, and clover; in early spring, permanent pasture, clover, and vetch, a cousin of the pea; in early summer, clover, peas, and early beans; in late summer, late beans, peanuts, and corn. By this time the pig is fat and ready for market. Cotton Belt farmers say that they can produce hogs at less cost here than in any other part of the country.

Special crops. There are certain localities that have special crops. Watermelons go out by the carload from Texas, Louisiana, Arkansas, Mississippi, Alabama, and Georgia, but Georgia leads them all.

After Florida and the Lower Rio Grande stop shipping early vegetables, strawberries, beans, cabbage, and tomatoes begin to go to market from eastern Louisiana, southern Mississippi, and northeastern Texas.

1. What is the meaning of this statement? "Something is growing nearly all the time."

The "Sugar Bowl." Almost everybody likes the taste of sugar. We all like sugar so much that we eat nearly 100 pounds per capita a year. But with all of our great country, we grow only about one-third of the sugar we eat. We buy most of our sugar from Cuba, Puerto Rico, the Philippines, and Hawaii. Louisiana and Florida grow almost all the sugar cane that is grown in the United States.

You ask the reason. The sugar cane grows best in hot weather. It likes plenty of sunshine with little or no frost. Sugar cane needs plenty of water in the soil to drink. Having these things, the plant will live for years. Southeastern Louisiana, the Sugar Bowl, and the shore of Lake Okeechobee in Florida have the weather that suits sugar cane best in the

Sugar cane is loaded into cars for shipment to the mill. The sugar production map will help you name the states that grow sugar cane.

Ewing Galloway

United States. But the weather of Cuba, where frost never comes and cool days are rare, suits it even better.

One year the Louisiana sugar cane plants became diseased. Their leaves were spotted and streaked. The plants had mosaic disease. They gave very little sugar. This worried the planters. They sent for a scientist who knew a great deal about sugar. When he came, he had three stalks of cane under his arm. "P. O. J." said the scientist. "Plant it and your troubles are over."

Now P. O. J. was a new kind of sugar cane which the scientist had grown from seed. Ordinary cane is grown by planting a cutting or piece of cane. This P. O. J. cane did not get mosaic disease. P. O. J. made the planters very happy! "We are growing much more sugar cane than we did before P. O. J. came along," said they.

Sugar, molasses, bagasse. Sugar cane grows tall like corn. When the plants ripen, the stalks are cut and taken to a mill. In the mill are large rollers. When stalks of sugar cane are run between rollers, the juice is squeezed out of them. Boil this juice to get out the water, and you have left brown sugar and molasses. The dry stalk that remains is called bagasse. Some bagasse is used for engine fuel, some is made into composition boards and is used for the inside walls of houses.

1. What other parts of our country produce sugar?

Rice. Rice is a swamp plant. Rice likes to live in water most of the time and in warm weather, 70° or above, all the time. Tractors plow the rice fields near the Mississippi, in Arkansas, and along the Gulf Coast of Louisiana and Texas. These three states grow most of the rice we eat. Nearly all of the remainder comes from California.

The fields are plowed and before rice is planted, farm machines, like road scrapers, make banks of earth a few inches high around the fields. The banks of earth will hold water on the land. So when rice has been planted, engines pump water to cover the fields to the depth of a few inches. When the rice begins to ripen, the water is allowed to drain off. Rice is harvested like wheat.

1. Use maps to help you prove this statement: Rice is grown in lands of heavy rainfall.

The pecan. The pecan tree grows wild in many of the Southern States. The tree bears nuts that people like to eat. But the kernels of most pecan nuts break into small pieces when you try to pry the kernel from the shell. Here and there, however, is a wild pecan tree whose nuts come out of the shells in unbroken halves. By budding or grafting, whole orchards of trees like these rare trees can be grown from the twigs of the one selected tree. There are now many pecan orchards in the Southern States.

Pecans are grown in every state from Texas to Virginia, but Texas, Georgia, and Oklahoma are among the leading states for marketing pecans.

Sponges, shrimps, oysters. Florida has sponge fisheries, and the bays along the north shore of the Gulf of Mexico have an oyster industry like that of Maryland and a large and rapidly growing shrimp fishery.

Perhaps you never saw a shrimp, but you can buy a can of shrimps at almost any grocery store. The shrimp is called a shellfish. It is a small animal with a

Tarpon Springs, Florida Chamber of Commerce

A sponge fleet at Tarpon Springs, Florida, is unloaded after several weeks of fishing. Sponge fishing is very interesting work. You may want to read more about it and report to the class.

thin shell that lives in shallow sea water, especially in bays near the shore. Fishermen catch millions of them in great nets, and factories can great quantities of shrimps and oysters at Gulfport and Biloxi, Mississippi, and along the coast of Louisiana and Texas. Many shrimps now come to market fresh-frozen along with other frozen foods.

Oysters like the bays along the Gulf Coast almost as well as they like the Chesapeake Bay.

Petroleum. When you studied California, you learned how petroleum was made, how petroleum occurs in the earth, and how men drill for oil. There is a network of large oil fields in the United States and of pipe lines through which oil is pumped to refineries.

Texas and its neighbors, Louisiana, Oklahoma, and Arkansas, now produce much more than half of all our oil.

Almost every day twelve million or more automobiles or trucks pull up to several hundred thousand American service stations. "Fill 'er up," say the drivers. And sixty million gallons or more of motor fuel flows into the gas tanks of cars and trucks.

Making gasoline from petroleum is big business. Without gasoline our country could not have one automobile for every four persons. Nor could we say that we have enough automobiles to give everybody in our country a ride at the same time.

The world "turns on oil." "Better check the oil," say the drivers. And the service men put a quart or two of oil into the cars that need it. Oil and grease lubricate cars—that is to say, make the parts of the machinery slippery so that the parts slide over one another without getting hot and burning.

Rob us of oil and grease, made from petroleum, and the world about us stops moving. Automobiles and trucks come to a halt. Planes are grounded. Ships lie in port. Railroad trains cannot move. Machinery of all kinds is stilled. If machines did not have grease, most of them would be ruined after being run only a few minutes. There is not enough soybean oil, cocoanut oil, lard, tallow, and other fats in the whole world to lubricate the machines in the United States alone. Petroleum lets the wheels go round.

Petroleum magic. Gas and oil for automobile engines, fuel oil for heating houses—these are common, everyday uses for petroleum. But chemists make hundreds of useful products from petroleum.

From petroleum the chemist gets materials for phonograph records, playing cards, violins, clarinets, automobile tires, false teeth, bathing salts, chessmen, and clothes for babies. Now you see why petroleum is called "black gold." Petroleum is black and it works magic.

Natural gas is found nearly always in oil fields and often it comes from the same well as petroleum. Texas and Louisiana are two of our largest producers of natural gas. These two states produce half or more of all the natural gas we get in the United States.

Natural gas is almost a perfect fuel. It is low in price. It burns clear with a very hot flame and no ashes. Natural gas is blown through pipes from oil fields to homes and factories in distant states. It is used chiefly for heating houses and other buildings, for cooking, and for making steam to drive machinery.

1. Review the story of petroleum.
2. Why are coal and petroleum called "black diamonds" and "black gold"?

Sulphur, salt, and magnesium. The Gulf Coastal Plain leads in the production of sulphur. Great masses of sulphur are found several hundred feet down under the mud lands near the Gulf Coast of Texas and Louisiana.

There is an easy way to mine sulphur. A well is bored, two pipes are put down, and steam made by natural gas goes down one pipe and melts the sulphur, which flows up the other pipe like water. As sulphur cools it hardens in big piles. It is blasted with dynamite and loaded into freight cars by steam shovels and away it goes to the fertilizer factories and the chemical works. Baton Rouge, Louisiana, has large chemical plants that use natural gas and salt, which is mined also in Texas and Louisiana.

At Freeport, Texas, a coast town near Galveston, there is a large plant for taking magnesium and bromine from sea water.

The western Gulf Coast Plain region. The western part of the Gulf Coast Plain region has great riches for manufacturing. It has petroleum, natural gas, sulphur, salt, and materials for glass and cement, from the earth. It has bromine and magnesium from the sea; coal and steel by cheap barge freight from Pittsburgh, Pennsylvania, and Birmingham, Alabama, to New Orleans, Louisiana, and other coast points by the intercoastal barge canal. These products are what we call basic raw materials. They show us why New Orleans, the largest city south of St. Louis and Washington, is rapidly becoming an industrial city, as well as the chief ocean gateway of the South. It has been that for over 150 years. These basic raw materials tell us why Houston and Austin, Texas, and Shreveport, Louisiana, gained 150% in population between 1920 and 1940.

The oil fields of Texas, Louisiana, and Oklahoma give thousands of jobs at drilling wells, laying pipe lines, building tanks, railroads, towns. People are busy getting oil, selling oil, and using it for new industries. The oil fields give power to run the big flour mills of Dallas, and one person in five in that city makes a living by working with oil.

The coast cities are busy refining oil and sending it away in ships.

The shallow waters of the Gulf Coast made it necessary for Texas cities to dig their way to the sea. Houston dug a ship canal in the sandy soil, the city became a port and soon it began to grow rapidly. Houston exports wheat from Texas and Oklahoma, Texas cotton, and millions of barrels of petroleum.

Corpus Christi got a ship channel through the shallow bay and pipe lines for gas and oil. Ships came, industries came, and the population increased fourfold in 20 years. The inter-coastal barge canal and waterway is being opened from Corpus Christi to Brownsville. A new ship channel has been dug to Brownsville, and ships with freezing chambers now carry Texas produce from Brownsville and Houston to New York.

Port Arthur at the end of many pipe lines claims to have more oil refineries around it than any other place in the world. Many tankers load in her harbor for eastern United States and for foreign lands.

Engines, pumps, pipes, tanks, and other oil field equipment make heavy business at New Orleans, Louisiana; Port Arthur, Houston, Dallas, Galveston, and Corpus Christi, Texas; Shreveport, Louisiana, and also at Tulsa and

San Antonio, Texas, has a Spanish atmosphere with its missions and tamale stands. One of our largest airfields, Randolph Field, is located at San Antonio.

H. L. Summerville

Oklahoma City, Oklahoma, in the northern part of this oil field. Sulphur, salt, petroleum, and natural gas are the raw materials for the heavy chemical industries that are growing up in every city near these great oil fields. Synthetic rubber is one of these products.

Mobile, Alabama, has the best natural harbor on the Gulf Coast. The city is a heavy importer of aluminum ore, has natural gas for power to run its paper mills, and is a large distributing center for parts of four states.

1. What is meant by basic raw materials of industry?

Some inland cities. San Antonio is a great cattle market and has some of the oil business, plus Randolph Field, a great air training center for the United States Army.

Austin is the capital of Texas, our largest state, and is matching the TVA in the way it uses the Colorado River for power.

Fort Worth says, "Here is where the west begins," and the city has the largest grain market, stockyards, and packing plants south of Kansas City.

Little Rock, Arkansas, has a cotton market, cotton factories, and furniture factories. Montgomery, Alabama, has saw mills, cotton mills, and a large cattle market.

Something to Do

1. Why do you think Florida, with all its coast line, does not have a great port, such as Seattle in Washington, or San Francisco in California? Discuss this point with your classmates.

2. Explain these statements:
   a. Southern Texas is the place where summer spends the winter.
   b. The tourist is the best crop Florida has.
   c. Rotation of crops helps to produce good crops.
   d. The western Gulf Coast Plain region has great riches for manufacturing finished goods.

3. Write a brief explanation of each of these terms:

a. tung oil
b. alluvial soil
c. delta land
d. phosphate rock
e. boll weevil
f. legumes
g. vetch
h. bagasse

4. You may want to read in a book of reference about cane sugar and beet sugar.

5. Write a short story telling about the growing of rice.

6. Make a list of at least 10 uses for petroleum.

7. Name five inland cities and list the reason for the importance of each.

8. Why do you or do you not have a good supply of fresh fruits and vegetables in your community? Discuss this question with your classmates.

9. Write a paragraph to explain why the population of Houston, Texas, increased 150% between 1920 and 1940.

10. Add pictures to your scrapbook on crops and industries of Florida and the Gulf Coastal Plain.

A Short Quiz

Copy the sentences and fill the blanks with the correct words:

1. Florida's soil is made mostly of ______.

2. The ______ is a large swamp covered by tall grass.

3. Florida has a supply of ______, a very necessary part of fertilizer.

4. Tung oil is used for making ______.

5. ______ makes a soil that is rich in plant food.

6. The ______ is an enemy of the cotton plant.

7. The city that is the gateway to the Mississippi River Valley is ______.

8. One of Florida's chief tourist centers, ______, is an airways center.

9. Southeastern Louisiana produces large quantities of ______.

10. ______, Texas has grown because it is a railroad center as well as a port.

Black Star

The cowboy with a herd of cattle is a familiar sight on the plains of Texas.

Chapter 23

The Western Parts and the Future of the South

The northwestern plains and prairies. The plains and prairies of northwestern Texas and Oklahoma are not like any other part of the Southern States.

Let us have a moving picture of this region by looking at some maps, one after another. First, the physical map shows that most of this area is highland, so high that the winter is cold—no early vegetable business here.

The rainfall map shows that it is a land of light rainfall. This was not a forested country except along the streams. It was easy for the farmer to plow this soil, but look out for drought!

The cotton map shows that the lower parts and the southern part of this region grow cotton. Cotton has increased here because there are no woods in which the weevils may find shelter and, also, because the cold winter freezes most of the beetles. There is so little rain that the cotton plants do not grow so tall as the plants do farther east. But the farmers are very glad that there are fewer weevils to spoil their cotton crop.

The next map is the corn map. It tells you that there is almost no corn here. The land is too dry. But see what the sorghum map shows—sorghum and more sorghum! We got the seeds of sorghum from dry lands in Asia and Africa. Sorghum, a cousin of corn, is a child of the dry lands. In our dry lands, where corn cannot thrive, sorghum provides grain and fodder for cattle.

We need to look at one more map, the wheat map. Now here is what our moving picture tells us. The farmers on the northwestern plains and prairies plant winter wheat in the autumn, sorghum in the spring, and cotton in the spring. But most of their land is in grass for cattle, and, when winter comes, the cattle eat the sorghum. Now you see why New Orleans and Galveston export wheat and you see where the flour mills of Dallas get the grain the mills need.

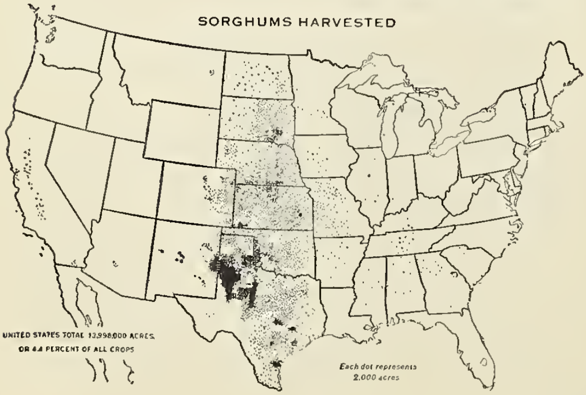
The leading cities of this region are Tulsa and Oklahoma City. Tulsa, which calls itself "Oil Capital of the World," has oil refineries, oil field supply houses, and the offices of more than 500 oil companies.

In Oklahoma City, oil derricks crowd close to the State Capitol steps.

1. Why was it easier to start farms in areas of light rainfall than in areas of heavy rainfall?

What climatic fact determines whether a farmer will plant sorghum or corn?

U.S. Dept. of Agriculture


SORGHUMS HARVESTED
UNITED STATES TOTAL 13,998,000 ACRES
OR 4.4 PERCENT OF ALL CROPS
Each dot represents
2,000 acres

The West Texas ranch country. On a trip through the ranch country we ride all day on a train going from Del Rio, Texas, on the Rio Grande, to El Paso, Texas, which is also on the Rio Grande. We cross land that is too dry for farms and much of it is too steep and stony to be used for farms. This ranch region is a part of the "Great Open Spaces." Here cattle, sheep, and goats manage to pick a living from scanty grass and the leaves of bushes. One ranch may have 5,000 acres, or 10,000 acres, even 20,000 acres. Automobiles and saddle horses are very useful to these ranchers.

The maps of sheep and goats show great numbers of these animals in the same place. This good pasture land is a rough area called the Edwards Plateau. The goats here are Angora goats from Turkey. They have long, silky hair, used for making cloth.

Texas has nearly all of the Angora goats in the United States. It has more sheep than California and Wyoming, the next two sheep states. Texas also leads in cattle, for cattle are kept in almost all parts of this largest state.

El Paso is at the western corner of this region. It is a distributing center for irrigated farm land along the Rio Grande, for ranches, and for mines in many mountainsides over a wide area in the United States and Mexico.

The future of the Southern States. The Southern States are a land having great possibility for increasing the production of useful things. No other part of the country has an equal possibility of so much increase in field crops, forest crops, and manufacture.

Agriculture. Less than one-third of any southern state is actually in crop. In Florida, only one-seventh of the land is in farms and only one-twentieth is in crop. Much of the cultivated land in the Southern States can be made to produce

Oklahoma City Chamber of Commerce

One of the unusual sights in our country is Oklahoma's Capitol surrounded by oil wells.

more than it does now. The Tennessee Valley experiments with cotton and grass show this.

We now have great sources of fertilizer and we are learning better ways of using it. By using fertilizer, we now can grow many good crops on sandy land that will not bring harvest without fertilizer. Farmers now know how to get part of fertilizer they need, the costly nitrogen, from the plants called legumes. For example, there is a plantation in Georgia not far from Augusta. A few years ago the plantation was what is called a "worn-out plantation." The land had been growing cotton and corn year after year. At last the soil had become so terribly poor that many persons thought there was nothing to do but abandon the land. We were very much surprised when we saw this plantation one day in August. The land had not been abandoned. Instead it was covered with a mass of legume plants called crotalaria. The plants were as high as the top of the radiator on our automobile, and so thick that a cat could scarcely get through them. In October, crotalaria was six feet tall. There were tons of crotalaria to the acre, and the seed was ripe. But the farmer did not harvest this crop. Instead he drove a tractor over it. The tractor pulled a big machine called a disc plow. The tractor and the plow mashed the crotalaria down, and chopped it into the earth. Wheat was planted there and some fertilizer was put on it. But no nitrogen was put in this fertilizer. That part of the fertilizer was supplied by the crop of legume. A good crop of wheat was harvested the following June. At that time the young crotalaria had sprouted from last year's seed. By October, crotalaria was again six feet high and ready to be disced under to feed another crop of wheat. That is the system—wheat every year—twice the state yield, more than the national yield—and this in a place where wheat is supposed not to grow!

Black Star

Stockyards are a common sight in cities near ranch country. Fort Worth, Texas, is one of the most important shipping centers of our southwestern area. Many railroads meet in the city.

The point is that the farmer has found a new variety of wheat that can stand the dampness of the Georgia climate. We are getting new and better varieties of nearly all kinds of crop plants. This is of great importance to the South, where the growing season is so long.

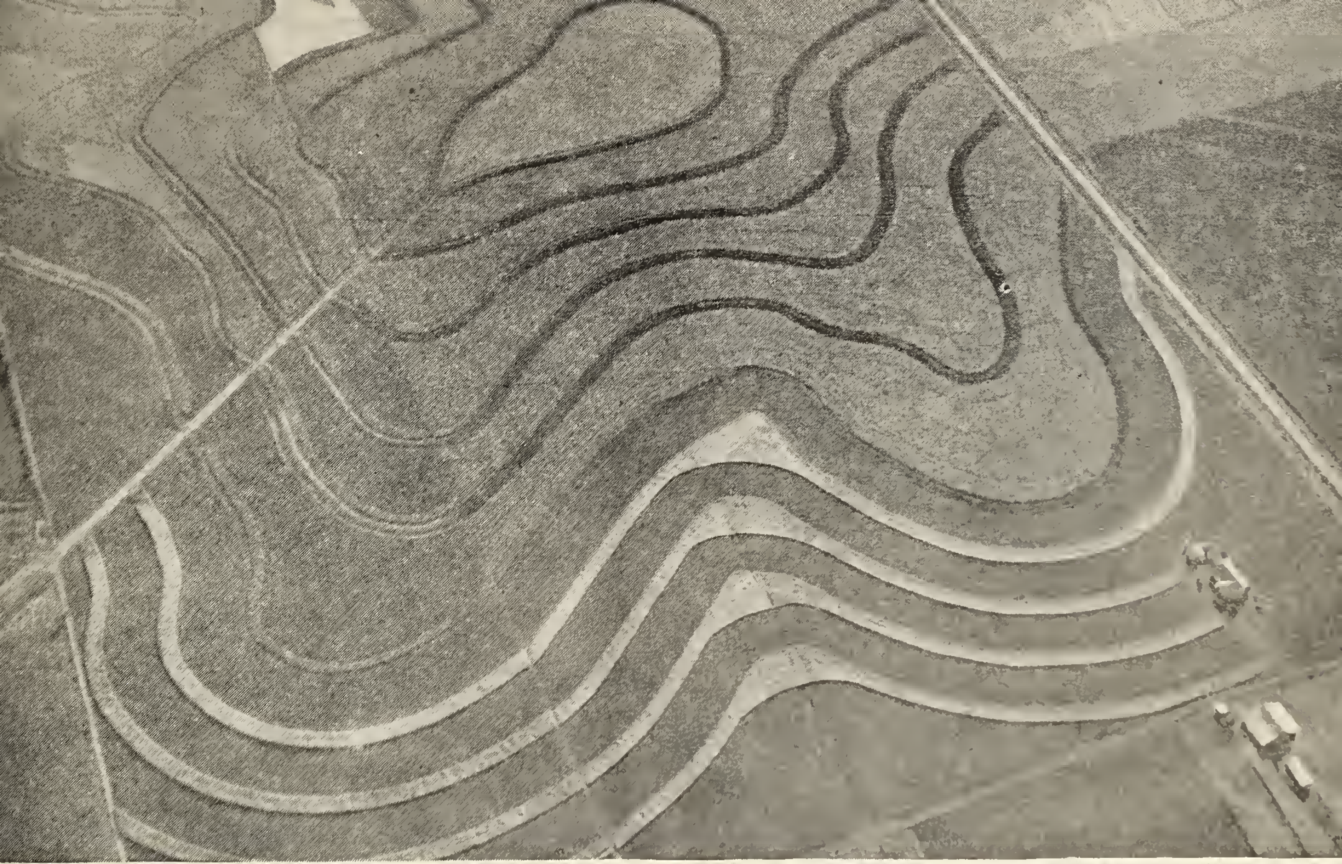
A truck farmer in Florida ships from the same field—lettuce in January, tomatoes in March, potatoes in May. Then he grows a great crop of velvet beans to feed his mules and to fertilize the earth.

In addition to supplying cotton, early vegetables, citrus fruit, and peaches, the South may become a great producer of wheat, corn, and meat.

Wood and lumber. The need for more farm crops may come gradually, but the country needs lumber now. Large areas of sandy southern land can be made to produce lumber faster than any other part of the United States.

The rising price of lumber, the new processes of making paper, and the increasing use of paper boards for making cartons and other things should soon cause the people of the Southern States to take perfect care of their forests, as some of them are doing now. Many forests in these states are deliberately burned every year or two to kill the bushes and little trees, so that a little grass can grow to feed some cattle. There are better ways of feeding cattle. The Southern States can produce great quantities of wood for the United States.

Manufacturing. The South has a great future in manufacturing. The southern summer is warm. Many people think it is too warm for people to work well in



Soil Conservation Service

Terracing, strip cropping, and contour planting of farm land on slopes are means of soil conservation. Look for information and make a class report on these forms of soil conservation.

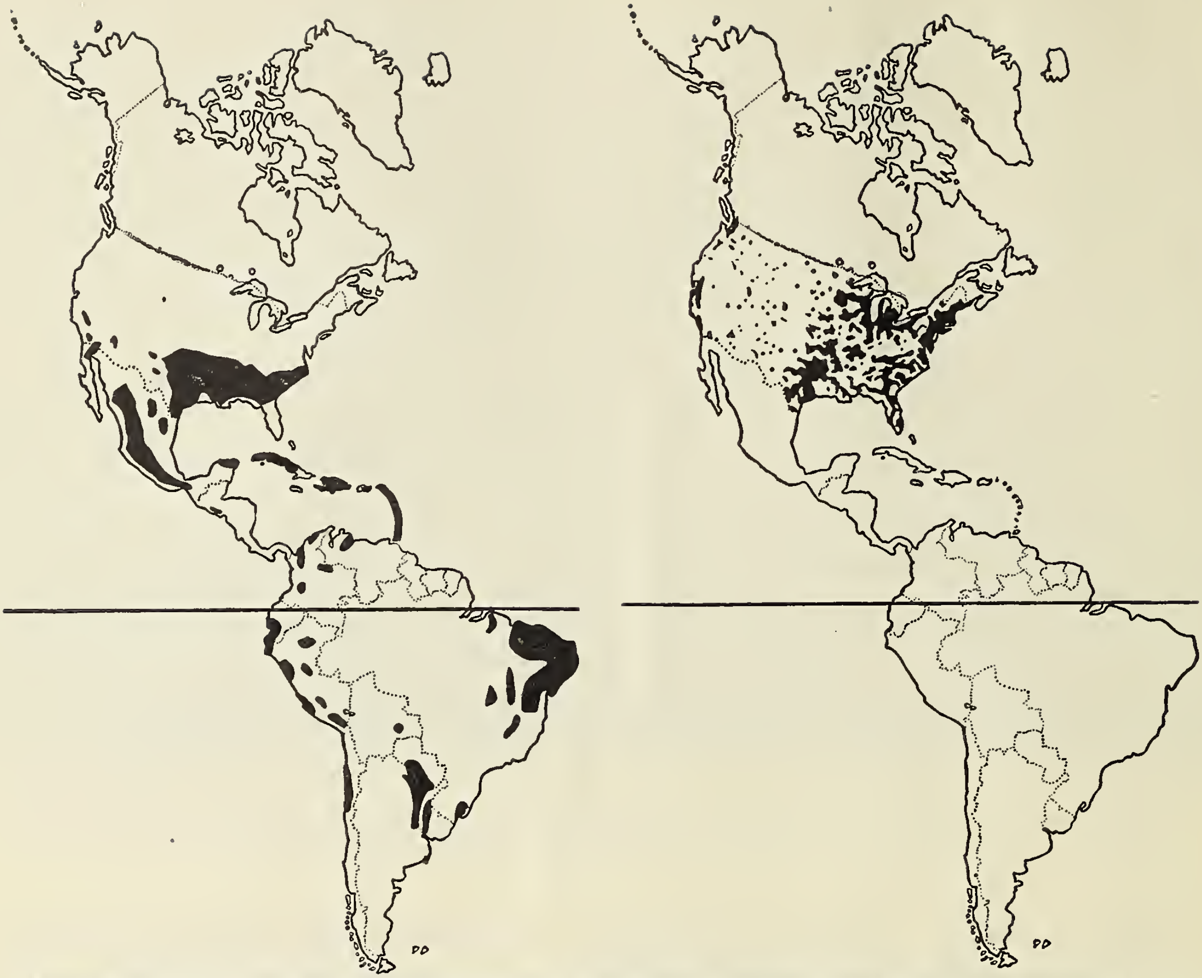
summer, but if you step into a building in New Orleans or some other southern city on a hot August day, you may almost wish for your coat. The building is artificially cooled.

For a long time we have made summer weather in our houses in winter by heating the houses. Now we are beginning to make spring weather in buildings in summer by cooling them. This is a great aid to factory workers, and more and more factories are being cooled.

In the South, with a cool factory, the people can use more fully these advantages for manufacturing:

1. Fresh food that grows in the gardens or neighborhood during nine, ten, or eleven months of the year.
2. The many raw materials—cotton, wood, iron from Birmingham, or by boat from Pittsburgh, sulphur, salt, petroleum, sand for glass, lime for cement, magnesium and bromine and other things from the sea.
3. The great resources for power—natural gas, petroleum, waterpower, and coal from southern Appalachia or from West Virginia.

It is no wonder that many northern firms are building branch factories in southern towns. Here is an illustration—in Jackson, which is the state capital of Mississippi and an oil refining town, there is a new factory. This factory makes cabinets for radios and sewing machines. The head office of this business is in Chicago, but why should wood be hauled to Chicago when cabinets can be made more easily nearer the southern



These maps show cotton and vegetable growing areas. What climate factors limit cotton growing? Why do you think vegetables are not grown in large quantities outside the United States?

saw mills. So this Chicago cabinet company is building factories in different parts of the country where the conditions are good. The factory goods may be sold by the Chicago office, but will be shipped direct from Mississippi or wherever the goods are made, to Colorado, or Connecticut, or wherever wanted.

Many companies have factories in five, ten, fifteen, or twenty places. Each factory may make things for its neighborhood or district, and also may send some far away. Many of the new factories of the future are being built and will be built in the smaller cities and towns of the South, where the worker can have plenty of room for gardens and flowers, fruit trees and nut trees, some chickens, and perhaps even a cow. In many places busses now carry workers 10 or 15 miles each day from their homes on the land to their factory jobs, just as busses are carrying children from their homes to school.

The South is a land of great promise for agriculture, for forest industries, and for manufacturing. If you happen to live in this part of our country, you will have the chance to use these advantages in helping to build up good communities. Every state and every country in the world needs better communities.

1. What is sorghum? Where and why is it grown?

2. Test yourself on the writing of the names of the Southern States and their capital cities.

Something to Do

1. Use maps to help you write answers to these questions on the northwestern plain and prairie area of the Southern States:
    a. Why is there no early vegetable business here?
    b. Why were there no forested areas except along streams?
    c. Why can cotton be grown in some parts?
    d. Why is sorghum grown here?
    e. Why is wheat exported from New Orleans and Galveston?
    f. Why should Oklahoma City have large stockyards, meat-packing plants, and flour mills?

2. Make an outline map of the Southern States. Draw in the important rivers and locate the capital city and other important cities in each of the states.

3. Read again the section that tells about the range country in the Western States. Compare the west Texas ranch country with the Western States range country. Why do Texas ranchers use saddle horses, planes, and jeeps in their work?

4. Use the statistical appendix and graphs to help you compare the population per square mile in a leading ranch state, a leading cotton-growing state, and a tobacco-producing state in the southern area. What facts or conclusions about differences in population can you draw from the comparisons?

5. Write a paragraph to explain how the cotton plantation was made poor and then improved.

A Short Quiz

Write the numbers of the statements that are entirely true. Rewrite those statements that are partly correct to make them entirely true.

1. Northwestern Texas and Oklahoma are mostly plains and prairies because of the heavy rainfall and warm winter weather.

2. Corn is an important crop of this area because of the rainfall.

3. Ranching is important in Texas because the land is too dry for farming. .

4. The Southern States have more land and people than the Western States.

5. The Great Smokies are the highest mountains west of the Mississippi.

6. Heavy rains and level land cause swamp land along the Gulf of Mexico.

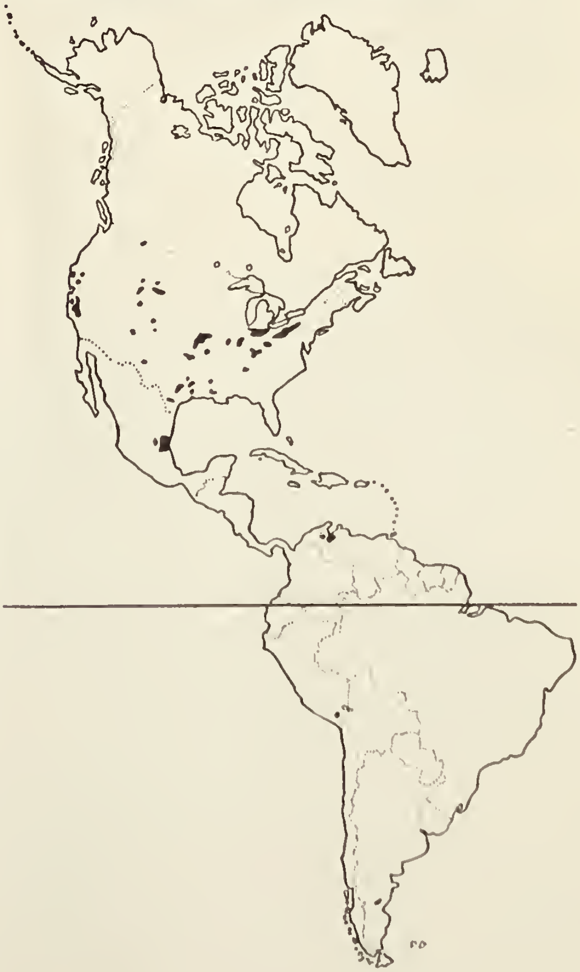
7. There are nine natural regions in the Southern States.

8. Cities at the edge of the Piedmont are called cities of the "Fall Line."

9. Resin is one of the products of the oak tree.

10. The Delmarva Peninsula is best known for its fish markets.

Workers extract petroleum in many areas. Why do you think there is need for petroleum?



11. Cotton is an important crop of the Southern States because of weather and soil.

12. The Continental Shelf is a part of the Appalachian Mountains.

13. Ships can sail into the harbor at Norfolk, even at low tide.

14. Florida has become a fruit and vegetable producer chiefly because of the warm weather.

15. The Southern States have a promising future in agriculture, forest industries, and manufacturing.

Stories You Will Enjoy

Stocky, Boy of West Texas by Elizabeth W. Baker—Winston

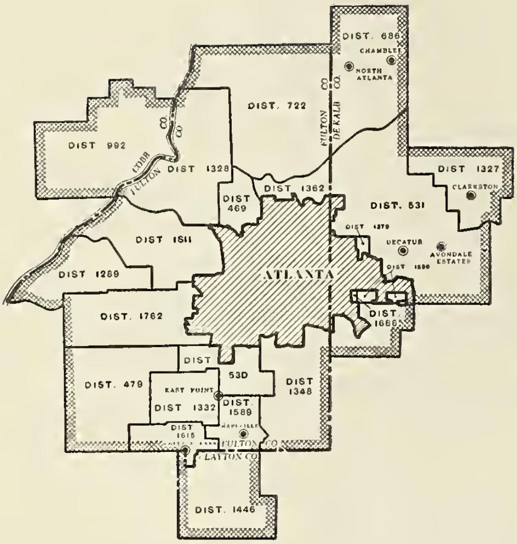
Smoky Ridge by Frederick Clyde Doyle—Longmans

Boys and Sally Down on a Plantation by Rose Bell Knox—Doubleday

Story Book of Cotton by Maud and Miska Petersham—Winston

Augustus and the River by Le Grand Henderson—Bobbs

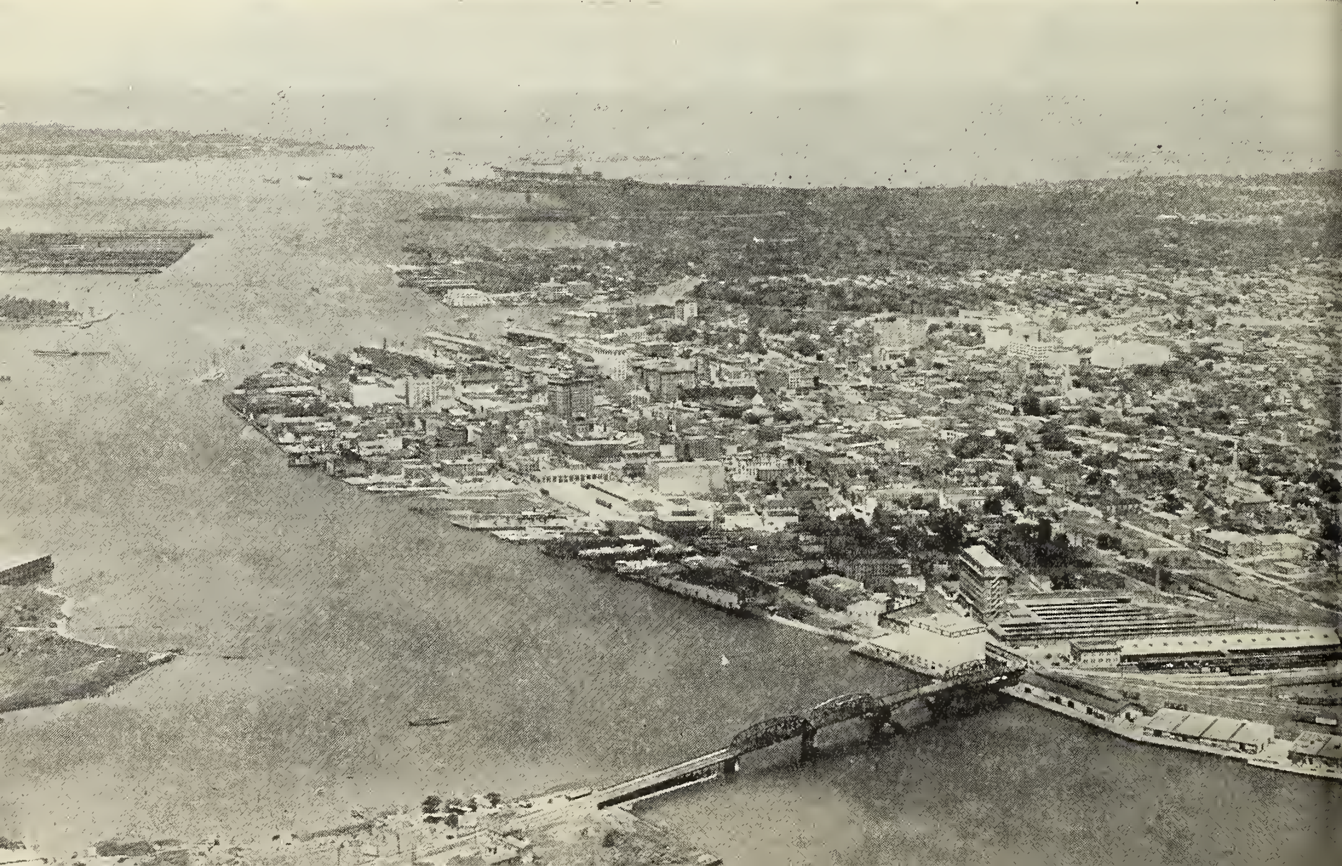
Honey Jane by May Justus—Doubleday



Atlanta, Georgia, is a metropolis of the South. Compare the number of metropolitan districts in the South and West by studying the table of metropolitan districts in the appendix.

Norfolk, with its excellent harbor, is an important link in trading with our neighbors across the seas. See the ocean in the distance and the river in the foreground. What river is this?

Virginia State Chamber of Commerce



Cotton, Vegetables, and Petroleum

Why do we consider these products —cotton, vegetables, and petroleum— important in the study of living in the Southern States? Because growing cotton and vegetables, drilling for petroleum, and manufacturing and marketing these products keep so many of our southern neighbors busy. Cloth made of cotton provides clothing and household articles. Vegetables grown by our southern neighbors are used on the dinner tables of our northern city neighbors. Petroleum products provide power for automobiles and factories and heat for houses. Petroleum by-products provide jobs and useful things for many people. So you see that southern cotton, or vegetables, or petroleum are important to every neighborhood in all parts of our country and to some of our neighbors across the seas.

The following three pages tell the picture stories of cotton, vegetables, and petroleum in our Southern States.

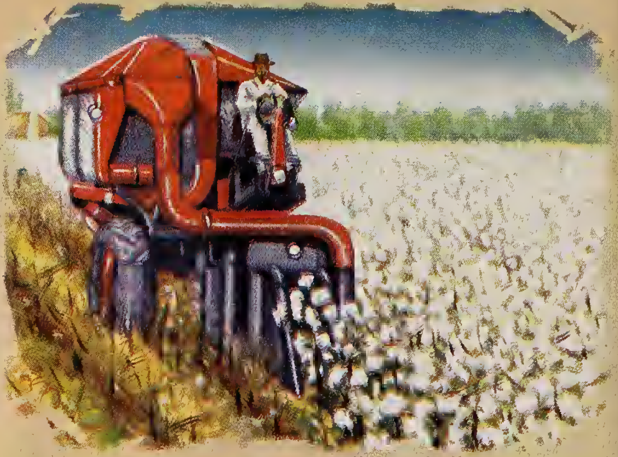
Planting cotton begins in early spring. Later, workers thin and cultivate the plants to help them grow. About the middle of August the pickers go through the fields, gathering the opened bolls of cotton. The cotton gin removes the seeds and packs the cotton into bales. In the mill other workers spin cotton yarn and weave cloth for clothing.

From seed to lunch table is the vegetable story the artist has painted. Preparing the soil for seeds, setting out the young tomato plants, cultivating them, picking and shipping ripe tomatoes, canning them, and drinking tomato juice—these are some of the steps in growing and consuming vegetables.

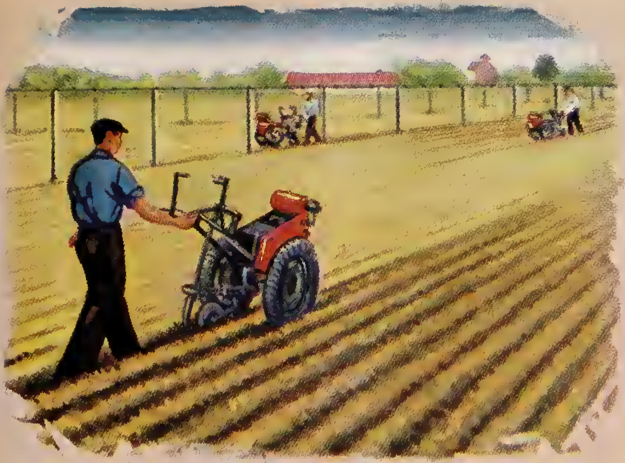
Sometimes we say, "The world turns on oil." Petroleum is indeed "black gold" because of its hundreds of uses. Taking petroleum from the earth and processing it into products for the consumer require much time and many workers. Men drill wells, pump the crude oil, and send it by cars, pipe lines, and ships called tankers to refineries. Refinery workers heat the crude oil and separate it into many different products; then they store the products in huge tanks. Trucks, tankers, and tank cars carry the refined oil to dealers who sell it to you.

Point out the different methods of production and the different uses of the finished products we make from cotton, vegetables, and petroleum.

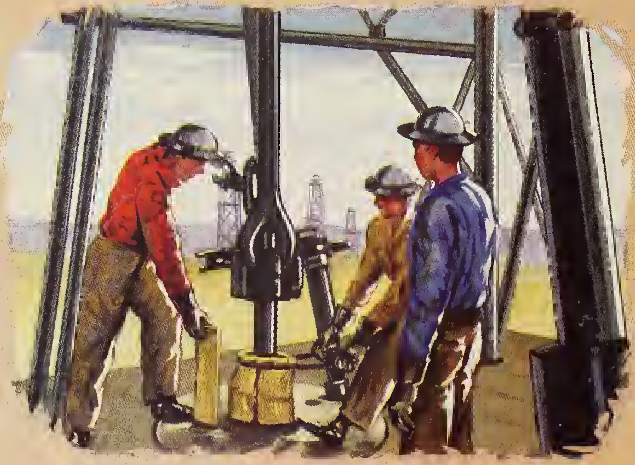
Cotton

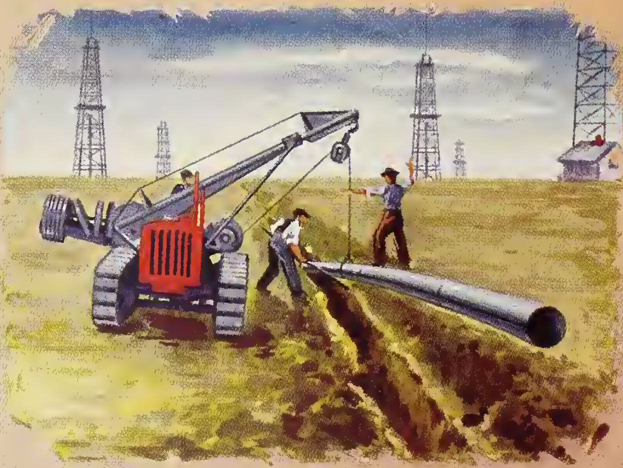


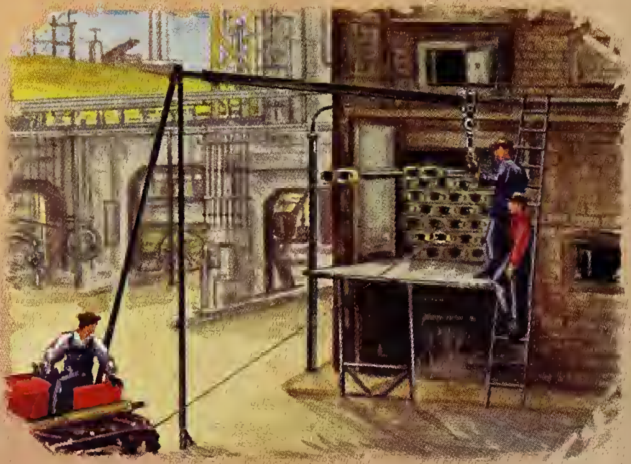
Vegetables

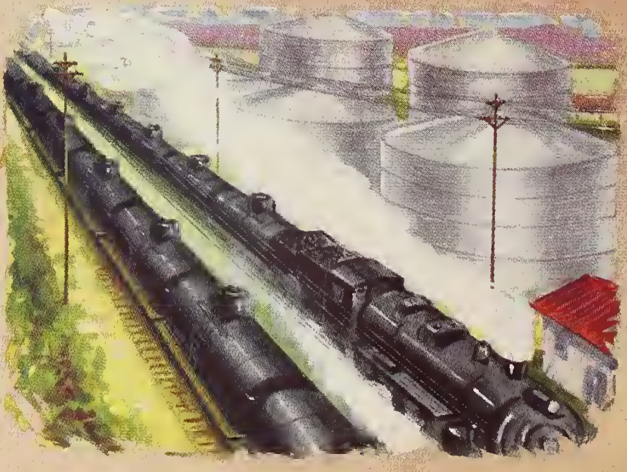


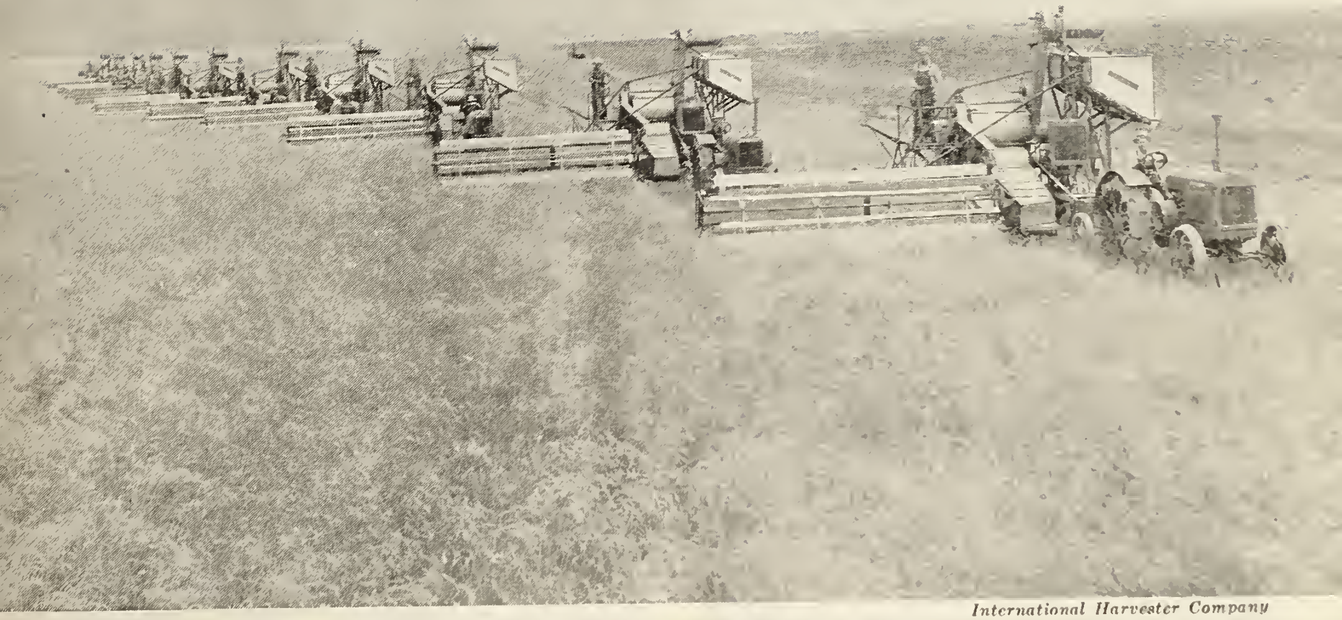
Petroleum











International Harvester Company

This fleet of combines cuts wheat or oats, threshes it and carries the grain in the tank.

Chapter 24

The North Central States

Food basket of the nation. "Let me have a hamburger, a piece of cherry pie, and a glass of milk."

Hundreds of counters get that order. Where does the restaurant keeper get the materials for this lunch? The chances are about one in two that the beef in the hamburger comes from the North Central States. These states have many stockyards and meat-packing plants. They prepare for sale in meat stores about half the cattle and hogs we raise in the United States.

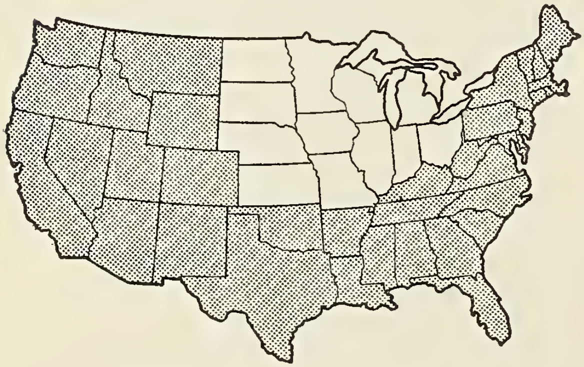
The North Central States also produce more than half the wheat for our bread. About three out of every four pounds of our butter are made in the North Central States, and so is about half the milk that is produced in the United States. The State of Michigan alone has grown in one year as many as half the sour cherries used for the good cherry pie so many of our people enjoy.

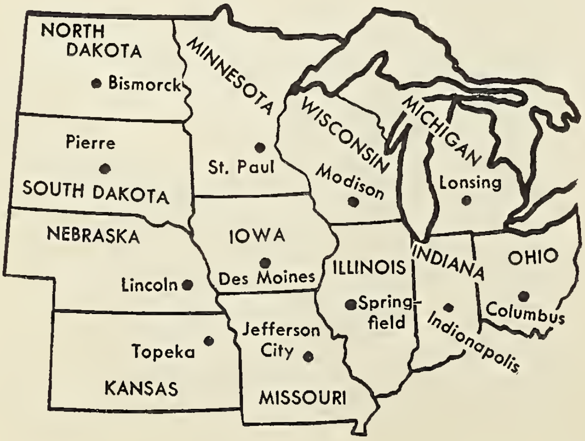
World's number one farm land. The North Central States probably have more advantages for farming than has any other piece of land about the same size anywhere on earth. The North Central States are one-fourth the area of the United States. They have enough land to cover England, France, Germany, Italy, and Japan.

There are five kinds of land in the North Central States—forest region, dairy region, Corn Belt, Great Plains, and the Ohio Valley and Ozark hill lands.

The maps show the part of the North Central States that was covered by the great glaciers. The Upper Lakes forest region is in northern Minnesota, Wisconsin, and Michigan. The ice mass of the Great Glacier scraped, dug, carried piles of soil and rocks for many miles and scattered the material about. This made the land stony, sandy, and hilly. Where the glacier passed, streams were dammed up, and thousands of lakes were made.

Twelve states are in the North Central group. Learn the names of their capital cities.





This part of our country is really the southern end of the Laurentian Upland. It is too rough for farms, but it is good for forests, mines, and vacations.

South of the rough part is a wide band where the glaciers left hills, but not too many stones. Here is pasture for millions of cows. This is now the land of dairy farms.

South and southwest of the dairy country is the Corn Belt. Most of its land is level or gently rolling and almost free of stones. When people from Europe first came here, they found level, rich lands, no trees, no stones! They called it "the prairies." They said it was a fine place for farms. So a part of the prairies became the Corn Belt, and some parts became the Winter Wheat Belt.

The fourth kind of land in the North Central States lies west of the Corn Belt and the prairies. This is the Great Plains, and it reaches from Canada to Oklahoma. This is the land of ranches and wheat.

The fifth piece of land in the North Central States is in the southeastern part, the hill country of the Ohio Valley and the Ozark Uplands.

1. Use a map to locate each of the five kinds of land in the North Central States—
    a. forest region
    b. dairy region
    c. Corn Belt
    d. Great Plains
    e. Ohio Valley and Ozark Uplands
2. Which kind of land do you think has the greatest amount of rainfall? the least amount?

A good climate. Most parts of the North Central States have weather that lets plants grow—weather that makes people feel like doing things. Rainfall varies, from about 36 inches per year at Akron, Ohio, to 20 inches or less per year on the Great Plains. Rain falls chiefly in the spring and early summer, and that is when the crops need the water most.

Frost, snow, and many freezing days come each year in every part of the twelve North Central States. But Cairo, Illinois, can be reasonably sure of 217 days each year with no frost, and Duluth, Minnesota, can count on having only 148 frost-free days. At Duluth the growing season is long enough for grain, vegetables, and some fruits, but not long enough for corn or warm enough for fruits such as peaches.

Minerals and manufacturing. These North Central States have many factory towns and are second only to the Northeastern States in the value of manufactured goods. They have the raw products to run factories. These states have petroleum and natural gas, and their people mine one of every five tons of the coal we burn. The coal mines are chiefly in Illinois, Indiana, and Ohio. Minnesota and Michigan supply most of our iron ore. Michigan also has rich mines of copper in the upper peninsula, and Missouri leads all states in mining lead.

Among the large cities of the North Central States are the automobile capital of the world, the world's largest meat-packing city, and the city that leads in the manufacture of flour. The North Central States have more condensed milk plants, cheese factories, vegetable and fruit canneries, and frozen-food locker plants than can be found in any other group of states. In the next chapter we will study, one by one, the five kinds of land in the North Central States.

Something to Do

1. Learn to write the names of the North Central States.

2. Use charts, maps, and the statistical tables to answer these questions:
   a. Which is the largest of the North Central States? the smallest?
   b. Which state has the most people?
   c. What is the population per square mile of this group of states? How does this compare with the Western States? the Southern States?
   d. Which group of states has the largest area—the Western, the Southern, or the North Central?
   e. Which North Central State is like your state in size and population?

3. List reasons why the North Central States may be called the "food basket of the nation."

4. Look for pictures and interesting magazine or newspaper articles about life in the North Central States.

5. Choose one of the five kinds of land you would like to visit in this group of states. Prepare a talk on what you would expect to see and learn on your visit.

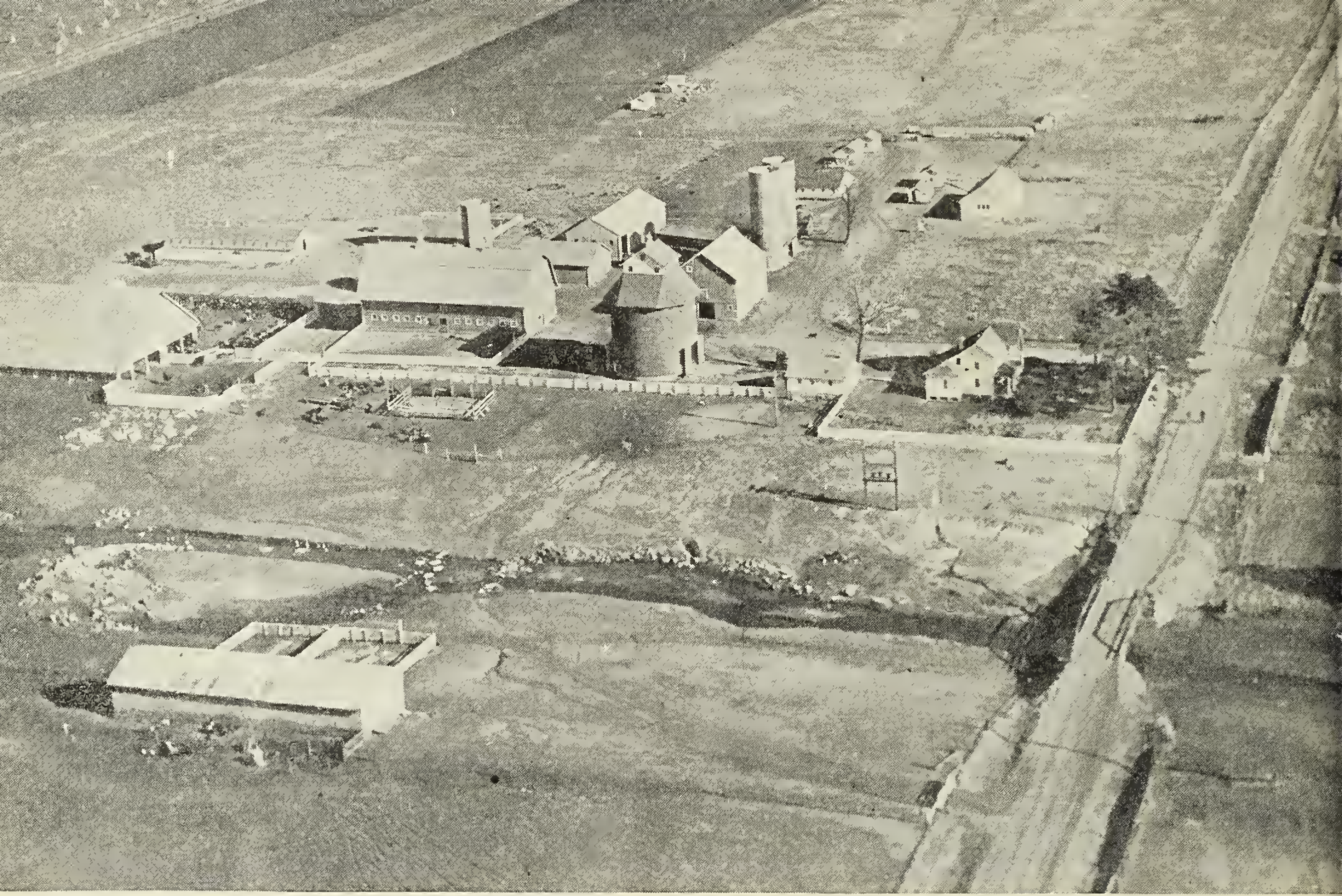
A Short Quiz

Copy the following sentences and fill the blanks to make the statements true about the North Central States:

1. The ______ made part of the land stony, sandy, and hilly.
2. There are ______ farms on the hills where there is pasture.
3. The prairies are known as the ______.
4. The Great Plains is the land of ______ and ______.
5. These states are rich in ______, such as coal, iron ore, copper, and lead.

Bell Photo

Mt. Rushmore Memorial in the Black Hills of South Dakota has carvings of famous men. Who are they?



Ewing Galloway

The Corn Belt includes parts of most of the North Central States. More than half the cultivated land of this region is planted in corn. Why does a typical Iowa farm include a hog barn?

Chapter 25

Five Kinds of Land in the North Central States

The Corn Belt

We will begin our study of the North Central States with the central piece of land called the Corn Belt. The land is nearly level. The soil is rich and black, and there are very few stones.

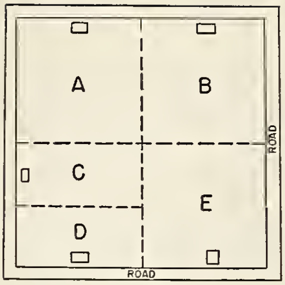
Summer weather is hot in the Corn Belt, and there is a shower every few days. This kind of weather suits corn. During July the plant shoots up, comes into bloom, and starts to make its ears of corn. Sometimes the corn plant grows one or two inches in one day. If the plant doesn't have water and warm weather at that time, it cannot make a good ear, or a good crop.

The map shows that the Corn Belt covers large parts of Ohio, Indiana, Illinois, and Iowa, and smaller parts of Wisconsin, Minnesota, South Dakota, Kansas, and Missouri. The Corn Belt reaches as far west as there is warm weather and plenty of summer rain.

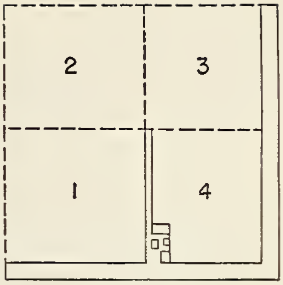
Much of the Corn Belt land was given away to early settlers by the United States Government between 1860 and 1880. A farm of 160 acres was given to anyone who would take it and make a home on it and live there. This land is almost level, so the government surveyors laid out roads one mile apart. The roads went straight north and south and straight east and west. The amount of land between the four roads was exactly one square mile. Surveyors divided the square mile into four equal parts of 160 acres each. Figure XX shows the square mile divided into five farms, A, B, C, D, and E. C and D have only 80 acres each, because one farm of 160 acres was made into two farms. Figure XXX shows us farm E. Because this farm is shown larger, we can see the fields. It is like hundreds and thousands of other Corn Belt farms. It has 160 acres. Beside the road is what we call the farmstead; that is, the house and garden, a barn and other outbuildings. There are four main fields, and a lane goes to the two back fields. This year field 1 is the corn field, 2 is the oat field, 3 is the hay field, and 4 is the pasture field. People say that the farmer has a four-year crop rotation—corn, oats, hay, and pasture. Next year the farmer will plant oats in field 1. In the year after, field 1 will be his hay field. The fourth year it will be his pasture field. In the fifth year, 1 will be in corn again. Each field gets each of the four crops once in four years. That is why we say the farmer has a four-year rotation.

The farmer sows grass seed with the oats when he sows oats in the spring. The grass grows up to make the hay field the next year.

What does the farmer do with his four crops? Does he use the crops or does he sell them? He has several choices. He may sell some oats or corn in town, or he may sell nothing but fat pigs or fat cattle. Some farmers think it is better to fatten pigs and cattle than to sell the grain.



XX



XXX

If the farmer keeps cattle, he usually buys animals when they are one or two years old. They come from the ranches in the Western States. The Corn Belt farmer feeds the cattle his corn and oats and hay. When they are fat he sends them to the stockyards in any one of a half dozen big cities. Or, it may be that the farmer doesn't like animals very much, so he may have two fields of corn and a field of oats and one of wheat.

Some farmers grow wheat instead of oats. The work is much the same for either crop from start to finish. The only difference is the time when the work is done. The oat crop is planted in the spring; the wheat crop is planted in the autumn. Some frost does not hurt young oats and wheat, but it kills corn.

You can ride through the Corn Belt in an automobile on a summer day and be passing cornfields most of the time. Corn, corn, corn; corn and oats, corn and hay, corn and pasture; cattle at pasture, cows at pasture, pigs at pasture; men with tractors cultivating corn, men with reapers harvesting grain, women driving tractors or automobiles; chickens running across the road in front of your automobile; and beside the road is a big red barn, and a wooden farmhouse with trees in the yard. This is a comfortable home for the Corn Belt farmer.

The Corn Belt extends as far to the west as there is enough rain to make good corn crops.

1. Why is the Corn Belt sometimes called the "meat belt?"

The Great Plains

The rainfall line of 20 inches per year is near the eastern edge of the Great Plains. Between it and the Rocky Mountains the plains are mostly level to gently rolling, but the land gets higher and higher as we come near the Rockies. There is, however, one group of mountains in the Great Plains. The Black Hills, in South Dakota and Wyoming, are mountains with peaks more than a mile high. These mountains get more rain than the surrounding plains. They have thick pine forests that look black in the distance. Here are gold, silver, and lead for the miner, and wooded streams and lakes for people on vacation.

Most parts of the Great Plains get enough rain for grass but not enough for crops of corn or wheat or oats. So most of this land of the Great Plains is in ranches. Millions of cattle are raised for meat, not for milk. A Great Plains ranch is much larger than a Corn Belt farm. About one third of every dollar the Nebraska farmer earns comes from cattle.

Farmers who made their homes on the Great Plains soon found that there is not enough rain for corn, but there is enough for sorghum. Sorghum grows in Oklahoma and farmers use it as cattle feed. Kansas, Nebraska, and South Dakota farmers also grow sorghum.

It is lucky that there is enough rain in some parts of these states for wheat. As the wheat farmers went farther west they found less rain and more crop failures. Then they began what is called "dry farming." The farmer plows the land several times in one year. He lets no plants grow to use the water that falls that year. The next year, he plants wheat. This crop gets some of last year's rain. Thus the farmer gets one crop in two years. Much wheat is now grown on some parts of the Great Plains. Indeed, Kansas is often the leading wheat state. North and South Dakota are great wheat states, too. Montana is also a great wheat state because it, too, has millions and millions of acres of Great Plains land.

The Kansas wheat is winter wheat; that is, the wheat is sown in the autumn and harvested in May or June. But in the Dakotas the winters are so cold that winter wheat planted in autumn is often killed. So in the Dakotas the farmers wait until early spring to plant their wheat. It is ready to be harvested late in summer. This is called spring wheat. The difference between winter wheat and spring wheat is in the time of planting and of harvesting.

1. Use the maps to help you answer:
   a. Where in the North Central States are oat and wheat crops produced?
   b. What is dry farming?

The Dust Bowl. Many dry farmers in the western part of the Kansas wheat region lost most of the topsoil of their farms. This is how it happened. After several dry years, there were no wheat or grass roots in the earth to hold the earth fast. The loose earth was like powder. The wind blew. The soil flew. Great clouds of powdered earth made the sky so dark that lamps had to be lighted at noon. The newspapers talked about the "Dust Bowl."

Man had broken the thick sod with his plow. The roots had rotted. Without grass to protect the soil, the winds blew away the top earth. Now man tried to stop the ruin he had started.

Philip Gendreau

Piles of sand are signs of wind storms in the dust bowl area. Rainfall is light. High winds make poor conditions for plant growth. You may want to read about conservation plans.

Cattlemen bought land from the wheat farmers and let grass grow again. Our Government said, "Most of this land should stay in grass for cattle and sheep. The grass roots will hold the earth. We will build dams to hold the water and plant trees to help stop the dust storms."

1. Why do you think saving the topsoil is so important to farming? Do you think there will always be a Dust Bowl in Kansas? Why?

Man-made oases. When snow melts in summer on the Rocky Mountains, much water runs down across the Great Plains. Farmers use the water to irrigate their fields in the valleys near the rivers.

The maps show where alfalfa, sugar beets, and potatoes are grown. These maps show you the largest man-made oasis in the North Central States. The irrigated valleys have many people to the square mile, many villages and towns, large sugar factories, and many stacks of alfalfa hay.

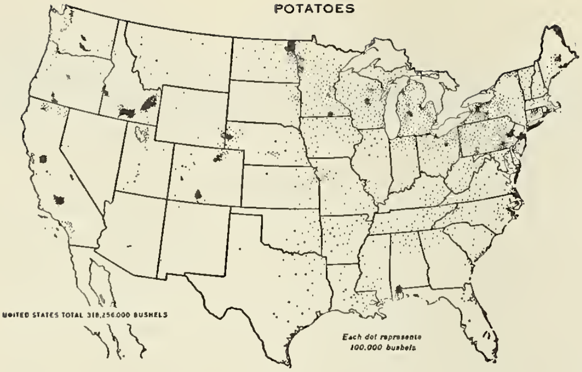
1. Locate on a map a man-made oasis in the North Central States. Is it near streams? What are the important crops of this area?

Missouri River Basin. You will be hearing these three words many times soon. There is a plan, like the TVA, for our Government to build more than a hundred dams and reservoirs in the Missouri River and the many streams that flow into it. This will give irrigation and water power in Montana, North Dakota, South Dakota, Nebraska, and Kansas.

1. What might these three men say about the Missouri River Plan?
    a. An upland rancher
    b. A man whose land could be irrigated from one of the new reservoirs
    c. A merchant in the nearby town

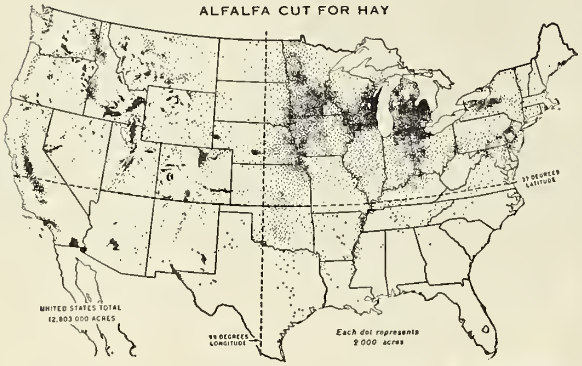
The Upper Lake Region

Forests and mines. Scrape, went the Great Glacier as it took soil from the northern part of Minnesota, Wisconsin,



POTATOES

UNITED STATES TOTAL 318,256,000 BUSHELS
Each dot represents 100,000 bushels



ALFALFA CUT FOR HAY

37 DEGREES LATITUDE
UNITED STATES TOTAL 12,803,000 ACRES
99 DEGREES LONGITUDE
Each dot represents 2,000 acres

U.S. Dept. of Agriculture

and Michigan. When the glacier retreated, it left only thin soil and bare rocks in some places, and earth spotted with swamps and shining with lakes.

Dig, went the Great Glacier as it made holes that later filled with water and became lakes and swamps.

Push, went the Great Glacier as it moved earth and stone and dropped them. Hills and valleys were formed, and valleys were turned into lakes.

Time passed—thousands of years passed. The weather became warmer. The ice melted. Trees sprouted, took root, and grew. Trees clothed the rough rocky country of the Upper Lakes. Trees made thick forests of pine, spruce, hemlock, and maple.

Man came to the forest in search of wood. Then man wanted lumber for houses, barns, fences, and sidewalks. Then loggers went into the great forests. The men cut down trees in the woods. The saws screamed in the mills. By the year 1890 the three Upper Lake States were supplying one-third or more of all the lumber used in the United States. Michigan had 800 lumber camps.

Now Minnesota, Wisconsin, and Michigan buy lumber from other states. The old forests are mostly gone. Trees that the lumberman missed, fire burned.

In many places forest fires also burned the soil beneath the trees. The rains and streams carried away the powdery earth that was no longer protected by a covering of leaves. In some places one can see the old dead stump of a tree on a wide bare rock. Fire and raindrops have taken away all the earth that once covered the rock and fed the tree. In some parts of the Upper Lake States as much as half the surface is bare rock, lakes, and swamps. Men call such places "the cut-over lands." The lumbermen, greedy for money, killed the goose that laid the golden eggs.

"We have ruined our forests," said the people. "We must use some of our tax money to plant trees. We will take back the cut-over lands from the lumbermen. We will plant trees." Today the State of Minnesota alone has 32 state forests and several national forests. They cover about one-tenth of the state. In these forests young pines and other trees are starting the long job of becoming pulpwood and saw logs. The people are trying to keep the dreadful killing fire from the forests.

The rough, rocky land in the states of the Upper Lakes is getting a new suit of forest clothes. Many, many years must pass, however, before these hills and valleys have the tree cover they once had. But each year more wood or lumber is produced in Minnesota, Wisconsin, and Michigan. And even now, Wisconsin stands fourth among the states for making wood pulp. In Michigan one sees many signs that read, "Keep Michigan Green."

1. Use a map to study the names, location, and size of the Great Lakes. Which are the Upper Lakes? the Lower? What is the meaning of the slogan, "Keep Michigan Green?"

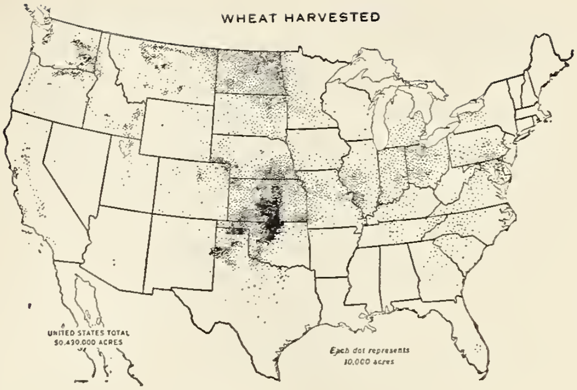
Lake land. Minnesota has 10,000 lakes. Michigan and Wisconsin together have almost as many. Thousands of these "Sky Blue Waters" are hidden away in wild forest country where a moose or deer may be standing outside your tent as you waken some fine summer morning.

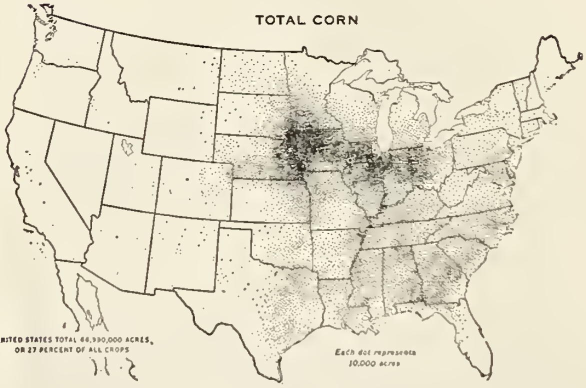
In summer thousands of people come to this wonderland of forest, lakes, streams, wild animals, and birds. They come from the hot cities and from the land without trees. They camp in the cool woods, where the thermometer seldom reads below 60° or above 75°. They fish, hunt, swim, go canoeing, sailing, or hiking, or just do nothing and rest.

The winters of "lake land" are snowy and cold—very cold. Twenty below zero is not uncommon—just the kind of weather for skating, coasting, skiing, and ice boating.

Copper and salt. There is a finger of Michigan land, called the Keweenaw Peninsula, that points into Lake Superior. On it are copper mines that once gave Michigan first place among the states in the mining of copper. Some of these mines are now a mile deep, and Michigan has only sixth place in copper production.

Long ago, as we count time, the southern part of Michigan was covered by shallow arms of the ocean. The water of these bays dried up. The salt remained. Some of these salt beds are 30 feet thick and give Michigan first place in salt mining.


WHEAT HARVESTED
UNITED STATES TOTAL 50,430,000 ACRES
Each dot represents 10,000 acres

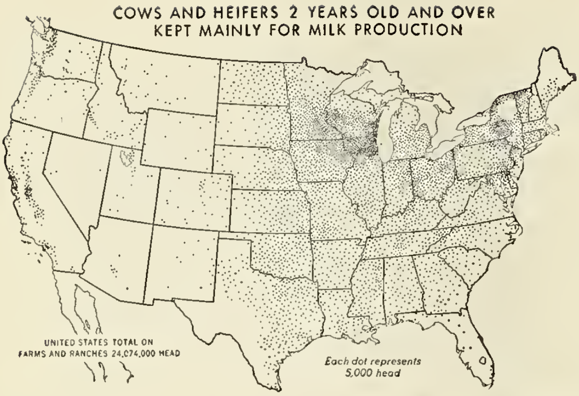

TOTAL CORN
UNITED STATES TOTAL 86,990,000 ACRES, OR 27 PERCENT OF ALL CROPS
Each dot represents 10,000 acres

U.S. Dept. of Agriculture

Salt makes food taste better. But salt also contains chlorine, one of the "big five" among the elements of the earth. It is a very important raw material in the manufacture of chemicals.

1. Why has Michigan dropped from first to sixth place in copper production? Will you use the word "extractive" as part of your explanation?
2. Review your understanding of the word "peninsula." Locate the Keweenaw Peninsula.
3. How many "elements" can you name?

Iron. West of Duluth and near the western end of Lake Superior in Minnesota and Wisconsin are the richest iron mines in the world. Much of the ore lies near the surface of the ground and is as soft as earth.


COWS AND HEIFERS 2 YEARS OLD AND OVER KEPT MAINLY FOR MILK PRODUCTION
UNITED STATES TOTAL ON FARMS AND RANCHES 24,074,000 HEAD
Each dot represents 5,000 head

U.S. Dept. of Agriculture

Big steam shovels scoop up this red, flaky material and toss it into open freight cars. When an ore train is loaded, it puffs away to Duluth, Superior, or some other Upper Lake port, where 100 tons of iron ore a minute slide into the hold of a ship.

The heavy ore boats go down the lakes to Chicago, Gary, Detroit, Toledo, Cleveland, Erie, Buffalo, and the other Lower Lake ports. There some are unloaded beside blast furnaces, and some of the ore is dumped into cars for the second time and sent on to Pittsburgh, Pennsylvania, Youngstown, Ohio, and other places that are away from the lake shore.

In the fire of the blast furnace, the iron ore is put with limestone and coke. The heat from the burning coke melts the iron out of the ore. The melted iron runs out like cream from a separator.

One year, during World War II, the United States mined about 140 million tons of iron ore. This was a bit less than half the iron ore produced in the world. From Minnesota came 70 out of every 100 tons of this iron, from Michigan, 15, and from Wisconsin, 1. Now you know why we call the Lake Superior iron mines "richest in the world."

1. What are the five steps in making iron?

Dairy Lands

Wisconsin, Minnesota, and Michigan have more dairy farms than any other part of our country. Wisconsin is known as the "dairy land of America."

A dairy farmer in these states grows cow feed in his fields. He often rotates his crops in one field like this—first year, corn; second year, oats or barley or soy beans; third year, hay; fourth year, pasture; and fifth year, pasture again. If some of his land is too hilly or stony to be plowed, the farmer may leave it in permanent pasture or woods. The cows eat almost everything that grows on the farm except, perhaps, what the pigs eat. The dairy farmers sell some of their milk to city milkmen; some goes to cheese factories, where milk is made into cheese. The rest of the milk goes to the factories that make condensed or dried or evaporated milk, or it goes into the cream separator and comes out as cream and skim milk. The cream goes to the churn in the creamery and comes out as butter and buttermilk. The skim milk is fed to the pigs, along with corn. How this feed does make these pigs grow!

Wisconsin stands first among the states in number of cows and quantity of milk produced. It makes about half the cheese we eat and about one can in three of our condensed and evaporated milk.

Its neighbor, Minnesota, is second in cows and milk and is our big leader in the making of butter. The butter is shipped to Boston and to many other distant cities.

1. Name the products used on and those sold from a dairy farm.

The silo. Were you to ride through dairy land, you would see that the roads are not straight, and much of the land is not level, but hilly. You would see fields of corn, fields of small grain such as oats and barley, fields of hay, and fields in pasture just as in the Corn Belt.

"But why is that farmer cutting his corn?" you ask. "The stalks are green and moist. The corn is not ripe."

But the farmer's corn cutter keeps on going—snip, snip, and the bundles of stalks fall into a truck alongside. Let us follow that truck.

The truck is loaded with tall stalks of corn and goes to the farmer's barn. Beside the barn is a tall, round building. This is a silo. The cornstalks are pushed into a machine. There swiftly turning knives chop the stalks, their leaves, and the ears of corn into small pieces. The pieces are blown through a pipe into the top of the silo.

Soon the silo is full of the tightly packed small pieces of corn. No air can get in except at the very top. The corn does not spoil. Day by day all winter some of it is taken out. This food helps cows to give more milk.

Dairy land winters are colder and longer than Corn Belt winters. The summers are cooler and shorter, but the farmer does not have to wait for his corn to get ripe. While it is still green he puts corn into the silo for winter food for cows. Minnesota, Wisconsin, and Michigan grow about half of all the corn used for silage in the whole United States.

Pigs keep healthy if they have clean places in which to live. Good houses, dry bedding, and shade from the hot summer sun are the only equipment pigs need. What products do pigs supply?

O. V. Gordon

1. It is an advantage to have a silo in an area where the corn-growing season is short. Why?

Fruit land near the lakes. "Loveliest sight in all the world," you say. The time is the spring of the year, and you are standing near the eastern shore of Lake Michigan. All around you is a sea of white and pink blossoms. The Michigan lake shore orchards are in bloom.

At about the same time, the Door Peninsula, that thumb of Wisconsin pointing into Lake Michigan, is a gay fairyland of blossoming cherry trees, white as popcorn. And near the southern shores of Lake Erie, in Ohio, the peach orchards shower down their petals.

After the blossoms come the fruit—cherries, apples, peaches, pears, grapes, berries. The fruit ripens in the warm summer sun and gives jobs to thousands of workers in canneries and quick-freezing plants.

1. From what you have learned about climate near bodies of water, tell how the lakes help farmers.

Celery and peas. In southwestern Michigan, near the lake, are some old swamps. These were once lakes that were filled with soft, rich, black earth, very fine for celery. Most of the celery we eat in the United States during half the summer and early fall comes from these old swamps, where ditches have been dug to drain off some of the water.

And canned peas! The chances are about one in three that the last canned peas you ate came from eastern Wisconsin and southern Minnesota.

The hill country of the Ohio River Valley and the Ozarks. The Great Glacier in its travels did not go so far south as the Ohio River. Too bad! It failed to smooth the steep hill country near the river. This up-and-down and roundabout land is neighbor to the level or gently rolling Corn Belt, but, oh, so different! Farmers of the hill country said, "We will plow our fields and sow corn and other crops as our fathers did back East." They did, and many continue to do so.

Every summer drenching thunderstorms come to the Ohio Valley. The lightning flashes, the thunder roars, the rain drives hard against the loose soil. Fields that at one time grew crops now have gullies—gullies that grow ever wider and ever deeper. The United States, this part of it, is washing away.

How to keep the good earth from being washed into our streams is a problem that is important for all of us, even if we live a thousand miles away. One way of keeping the soil in place is to plant steep slopes with trees—fruit trees, nut trees, or trees grown for their wood. Another way is to carpet the not-so-steep slopes with grass or clover. These plants have millions of roots, and their tops keep the raindrops from hitting the earth.

The Ozarks. We have already learned about the Ozarks of Arkansas. The Missouri part is much like the Arkansas part, and both are much like the Ohio Valley hills.

Near Joplin, Missouri, are mines of lead and zinc. Best of all, the Ozarks are a big playground of woods, lakes, and streams. Many people from the Cotton Belt come here for their health and for a summer vacation.

1. How are people in cities affected when farm land is ruined?
2. Across what states do the Ozark hills and mountains stretch?

Something to Do

1. Explain each of the following:
   - a. four year rotation of crops
   - b. dry farming
   - c. winter wheat
   - d. spring wheat
   - e. man-made oasis
   - f. silo
   - g. gullies
   - h. soy beans
   - i. glacier

2. Make a list of the products made from corn; from wheat; from oats; from soy beans.

3. Collect pictures of different kinds of farm machinery used on the large farms in the North Central States. Look for information about the machines and write a description to fit each picture.

4. You may want to look for information and make a special report on the stone carvings of famous men on Mt. Rushmore in the Black Hills.

5. Why is most of the Great Plains area a land of ranches instead of farms? Write a paragraph about the effect rainfall has on the way people live.

6. There are many persons to the square mile in irrigated sections of a dry area. Can you give the reasons for this fact? Give examples to prove the fact.

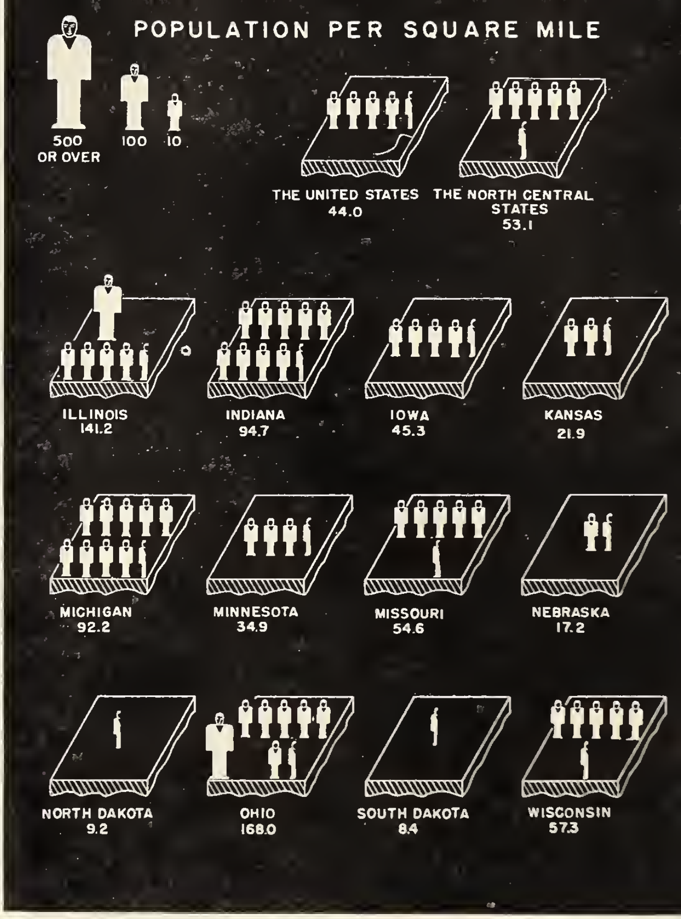
7. Explain in your own words the effect of the Great Glacier in the North Central States.

8. Learn to write the names of the Great Lakes.

9. Large boats carry iron ore from the mines in Minnesota and Wisconsin to Lower Lake ports. Some of these boats are 600 feet long. Perhaps you would like to measure a distance of 600 feet near your school to give you an idea of the length of ore boats. You also may want to compare a ton of coal, or of stones, with the 100 tons of ore that slide into the boat per minute.

10. You may want to read about the growing of celery and make a report to the class on it.

11. Collect or draw pictures to show:
    - a. open-pit mining
    - b. lake boats loading ore
    - c. steel manufacturing
    - d. soil conservation



Which region is more densely populated, the Southern States or the North Central States? Give reasons to prove your answer.

A Short Quiz

The following questions can be answered by the words "yes" or "no." Write the numbers of the questions and with each write the correct answer.

1. Is the Corn Belt a mixed-farming area?
2. Is a wheat crop harvested each year in dry farming?
3. Do grass roots hold the earth fast in an area of little rainfall?
4. Do more persons live in irrigated valleys than on plains?
5. Has there been a steady supply of lumber from the Upper Lakes region?
6. Are there salt mines in Michigan?
7. Is rough, rocky, hilly land good for plowed fields?
8. Is the Door Peninsula a lumbering area?
9. Do the lakes make fruit growing possible on the Michigan lake shore?
10. Are the Ozarks a good vacation spot?
11. Is Kansas known as "dairy land"?
12. Are there more ranches than farms in the Great Plains area?
13. Is Minnesota a land of lakes?

Detroit Conservation and Tourists' Bureau

Ambassador Bridge spans the Detroit River to connect Detroit, Michigan, and Windsor, in the province of Ontario. This suspension bridge is one of the links with our neighbor, Canada.

Chapter 26

Lake Cities of the North Central States

Here is a very, very important fact. Boats on the Great Lakes can carry freight more cheaply than freight can be carried by truck or train or plane. Therefore, everyone who can do so, ships his freight by boat. If a Minnesota grain dealer is sending wheat to New York, he rushes the wheat to the lake port of Duluth by train. At Duluth the wheat is transferred to a lake steamer. At Buffalo the wheat is put on a canal barge. Boats on the New York Barge Canal can give a cheaper rate than any railroad can give.

For the same reason, much farm produce of Nebraska, Iowa, Illinois, and Indiana goes to boats at port cities on Lake Michigan, and Ohio produce goes to Lake Erie boats. The large lake boats go from Duluth, on Lake Superior, to Buffalo, on Lake Erie, and smaller boats go on through the Welland Canal to Lake Ontario and Montreal.

1. Make a list of the cities shown on the map of Ohio and of North Dakota. Use the statistical tables to help you mark those cities on your list that are metropolitan districts.

Which state has the larger number of cities? Which state has the larger number of metropolitan districts?

The following paragraphs will tell you the reasons for the difference in cities in these states.

Chicago. In 1830 Chicago was only a small village in a marsh. Today almost 3½ million people call Chicago their home town. Chicago has become the second city in the United States and one of the few very large cities of the world. Many smaller cities around it make it one of our largest metropolitan districts. "Why this growth?" you ask. Geography gives the answer.

Chicago is at the point where Lake Michigan reaches into the heart of the Corn Belt. This city has a dozen or more steamship lines carrying freight to and from other cities on the Great Lakes, the St. Lawrence, and the Atlantic Ocean. About twenty business companies run barges from Chicago to take and collect freight at places along the Mississippi River as far south as New Orleans. The people of Chicago get things to work with, things to sell, and things to eat that come by lake boats, by canal and river barges, and by railways, by trucks, and by airplanes. It is a great air traffic center.

1. Trace the water routes from Chicago to prove that this city is at a waterways crossroads.

The railroad center. All railroads between the northeastern United States and the West and Northwest must pass south of Lake Michigan. Therefore, Chicago soon became a meeting place for trains. Trains from the Atlantic coast of our country, trains from the Pacific, trains from the Gulf of Mexico, all met at Chicago. And to this day, passenger trains do not pass through Chicago. All stop there. Some sleeping cars are transferred from one road to another and go from coast to coast.

One passenger train a minute, on the average, enters and leaves the city. And about 45,000 freight cars are shifted about daily in the Chicago freight yards. Chicago is the world's largest railroad center.

The meat-packing center. The farms and the feed lots of the Corn Belt send ten million or more animals a year to the Chicago stockyards. Cattle, calves, sheep, lambs, swine come by the trainload. Meat packers buy these animals. In an hour or two the animals may be meat in the big refrigerators, waiting to go in refrigerator cars to ten thousand stores. There they are sold over the counter as beef steak, roasts, veal cutlets, legs of lamb, pork chops, sausage, or canned meat. Chicago is the largest meat-packing city in the world.

The distributing center. Over a third of the people of the United States live within 500 miles of Chicago. They buy what they need from the local stores. These stores buy the goods they sell from wholesale dealers. More than one-third of all wholesale dealers in the United States have offices in Chicago. The offices are supply houses for thousands of stores in the towns and cities of the Corn Belt.

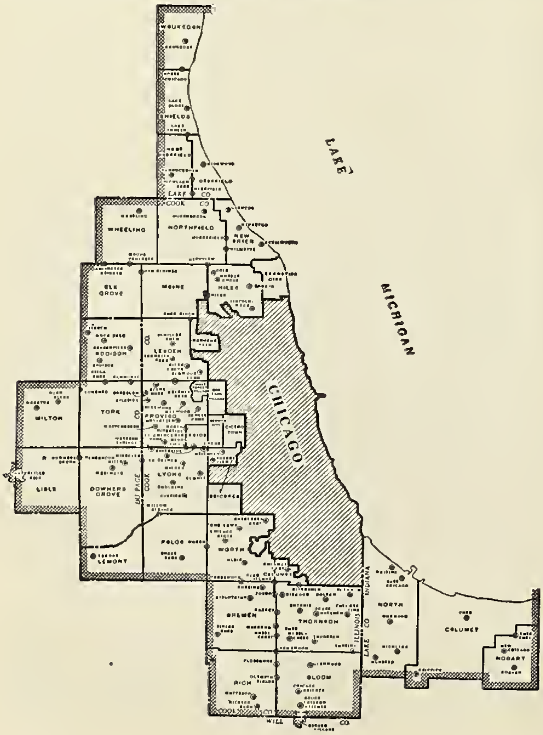
One of our government men was sent to live in Greenland. He needed a house. So he ordered one by mail from Chicago. It came—each piece cut exactly the right size and shape and ready to be set up. Chicago is our largest mail-order center.

The manufacturing center. Lake shore neighbors of Chicago are Gary, Hammond, East Chicago, and Whiting; they are called the Calumet District. They are, as you see, in Indiana. These are a part of the Chicago Metropolitan District. This Calumet District has oil pipe lines from Texas and Wyoming, and it refines petroleum. It makes more steel and products made from steel than any other place in the world.

Big boats bring iron ore from the mines of Minnesota or Michigan. The boats tie up to docks at the southern end of Lake Michigan. Clamshell buckets dive into the hold of a ship, grab a dozen tons of ore at one bite, and drop the ore into storage piles beside the blast furnaces.

Coal, coke, and limestone from Illinois, Indiana, and Pennsylvania ride in freight cars to meet the iron ore at Gary on the shore of the lake. There blast furnaces roar as the iron is melted. The melted iron flows into the ladle cars and hurries away to the steel mills.

The Chicago Metropolitan District occupies parts of the States of Illinois and Indiana. The central city of a metropolitan area is more crowded with people than its suburbs. Chicago has 16½ thousand persons per square mile while its suburbs have less than two thousand per square mile.



At the steel mill, a man puts several thousand horse power to work in the same way that you guide an automobile. You see red-hot pieces of steel, that may weigh many tons, being hammered, shaped, rolled like pie crust, and tossed about as a blacksmith tosses a horseshoe. Gary boasts the largest steel mill in the world.

It is easy to see why the Chicago district makes more farm machinery than any other place in the world, and why its thousands of factories make ten thousand other things that are wanted in homes, farms, and factories. Some are sold by the mail-order houses. Every other city on the shore of the Great Lakes has some of Chicago's advantages of location. Every one does some of the things Chicago does, but none does them all.

1. What two factors cause Chicago to make more farm machinery than any other place in the world?
2. How many reasons can you give for Chicago being a center for the following:
   a. railroads
   b. meat-packing
   c. distribution
   d. manufacturing

Detroit. The "motor capital of the world" is a name often given to Detroit. But most of the cars are not made in Detroit. The world's largest automobile factory, for example, is at River Rouge, near Detroit. It takes hundreds of parts to make an automobile. Flint, Pontiac, and other towns in the southern part of Michigan are busy making automobiles or parts for automobiles. Indeed, towns in Illinois, Indiana, Ohio, Pennsylvania, and even New England make parts for Detroit automobiles.

Decentralization. The making of automobiles is an example of decentralization. That big word means to stop making the many parts of a machine in one big central place and make them instead in a number of other smaller places. One of our automobile manufacturers says, "We assemble the pieces of the car almost anywhere, but we must not try to make all the parts of our car in big cities. We can make these parts as quickly and as cheaply in small towns. Then our men and women, when they have finished a day's work, can go home to their flower gardens, vegetable gardens, or small farms."

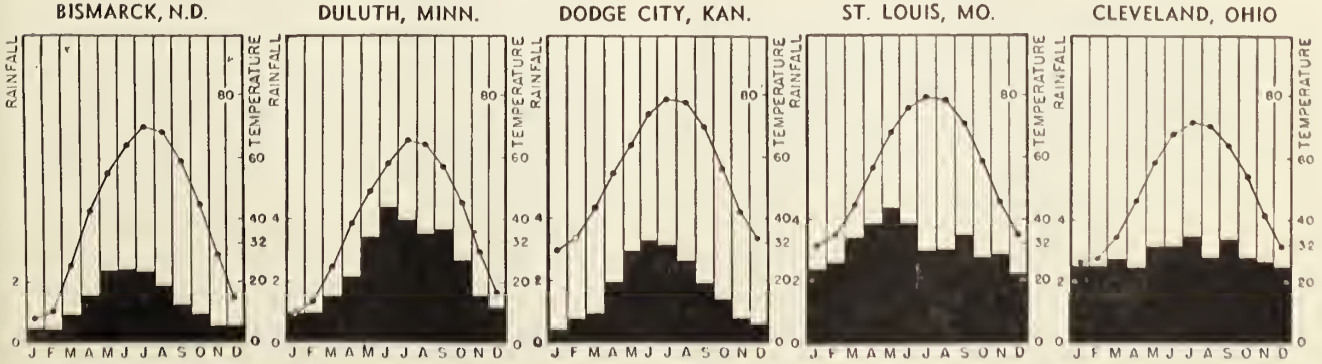
Standardization. Here is another big word, but it is not hard to understand. An automobile worker makes a hub cap. He works on it until it will snap on a wheel quickly and will not jolt loose. Then the worker makes thousands of other hub caps exactly the same size, shape, weight, and strength as the first cap. He has built these caps to the standard of his model.

A driver pulls up to a service station just anywhere in the United States or in many countries overseas. "Put a hub cap on my left front wheel," says he. The service man takes a cap from his stockroom, and snap!—the job is done. Now you understand how useful standardization is.

1. Which do you think would cost less—to buy a hub cap that is standard or to have the local garage man make one to fit your car? Give reasons for your answer.
2. Standardization means cheap cars and more jobs for auto workers. Why is this true?
3. How has standardization helped trade with other countries?

Toledo. Toledo has a good harbor on the Maumee River, within easy reach of Lake Erie. Toledo is the great coal port of the lakes. One railroad has coal piers at the Toledo harbor which are so big that sixteen lake steamers can tie up to the piers at one time. Some years the lake steamers carry 25 million tons of coal from Toledo to other places on the Great Lakes. The boats bring back chiefly iron ore and wheat.

Cleveland. Cleveland is the great iron ore port of the Lower Lakes, and sixth city of the United States in population. The Cleveland harbor is protected by a breakwater. Here ships may anchor in safety or sail into the Cuyahoga River


In these areas the largest amount of rain falls during the summer months. What effect does this fact have on the kinds of crops grown? Which city has the lowest January temperature? Name two cities that have less than an inch of rainfall in January.

and tie up close to the factories on the flat lands beside the river.

Cleveland uses the iron from Minnesota and Michigan and the coal from Ohio, Pennsylvania, and West Virginia to make almost every kind of iron and steel product from hardware to heavy machinery and motor trucks.

Milwaukee. This city, 85 miles north of Chicago, has an outer lake harbor somewhat like the Cleveland harbor, and an inner harbor formed by three rivers that flow into the lake. Within the city are factories that can turn out a frame for an automobile in eight seconds. Milwaukee factories also make big tanks for use in oil refining. They make pipe for oil lines, tractors, steam shovels, and many, many kinds of machinery.

Duluth and Superior. These two cities stand at the western end of the Great Lakes waterway. They have tall elevators to store wheat and other grains until the grain is poured into the lake steamers. These two cities have the largest iron ore docks in the world; they have handled 25 million or more tons of iron ore in one season. A season is that part of the year during which the lakes are not frozen tight. At Duluth-Superior, "the season" is usually from some time in April to some time in November. One railroad at Superior owns ore docks at which 2,184 Great Lakes steamers were loaded in one season.

Ships that carry ore and grain often bring back coal and other needed supplies for Duluth-Superior and the many places far to the west of the Lakes.

Something to Do

1. Name the three largest cities on the Great Lakes. Give as many reasons as you can why three of the six largest cities in the United States are on the Great Lakes.

2. We say geography is the reason for the growth of the city of Chicago. Make a list of the geographic factors that you think affected Chicago's growth. Discuss them with your classmates.

3. Someone in your class may want to get information about the railroads that meet in Chicago. Make a booklet of the pictures of trains and of the names of the railroads whose trains stop at Chicago. Do the same for air lines and airplanes.

4. Add pictures to your scrapbook on the meat-packing business, the steel industry, and automobile assembling.

5. Discuss with your classmates what decentralization of industry means to the workers. Where would you prefer to live—in a big city, a small town, or in the country? Why?

6. Why are the cities of Duluth and Superior not so good as Chicago for wholesale stores? Use a map and write your answer. Compare it with your classmates' answers.

7. Choose a city of the North Central States to read about in a reference book. Prepare a talk to give the class on what you read.

8. Find a sentence in Chapter 26 in which each of the following terms has been used. Read the sentence carefully, and then write a sentence of your own, using the same term.

a. on the average
b. feed lots
c. stockyards
d. wholesale dealers
e. mail-order houses
f. decentralization
g. standardization
h. breakwater
i. iron ore docks

A Short Quiz

Copy the sentences below. Fill the blanks with the correct words.

1. Freight can be carried ______ by boat on the ______ ______.

2. Chicago is located on Lake ______.

3. ______ is known as the motor capital of the world.

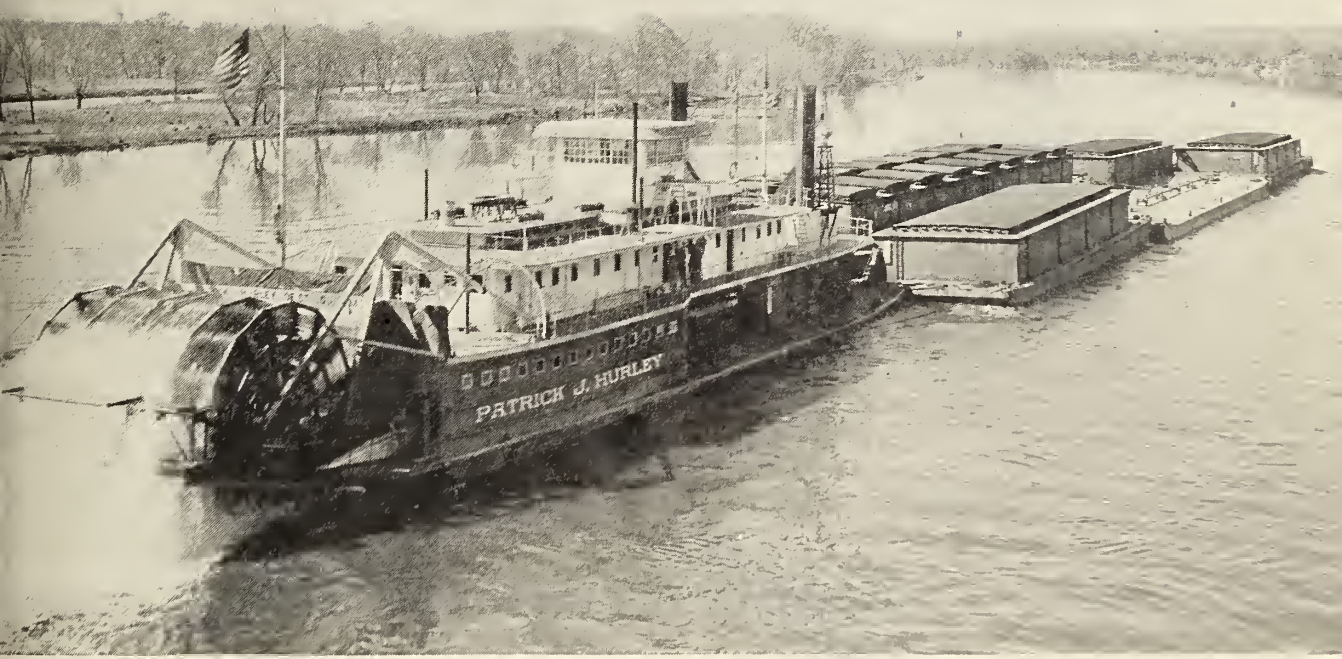
4. Much ______ is brought into the harbor at Toledo.

5. The great iron ore port of the Lower Lakes is ______.

6. The ______ District in Indiana is part of Chicago's Metropolitan District.

7. United States' second city in population and in manufacturing is ______.

8. Milwaukee is the largest city in ______.



U.S. Engineers

This is the way freight moves on the Mississippi and its branches.

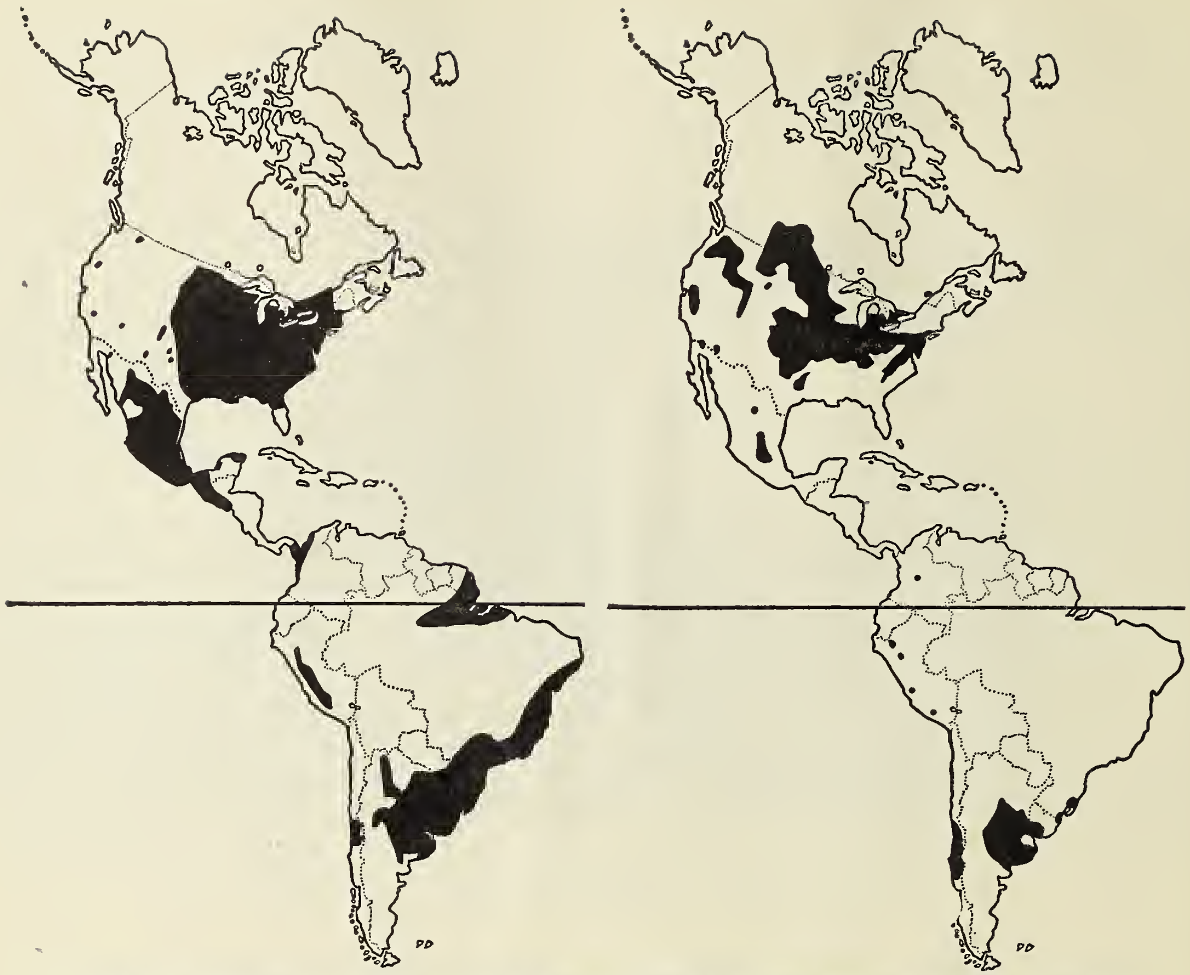
Chapter 27

River Ports of the North Central States

St. Louis. Three great rivers, the Mississippi, the Ohio, and the Missouri, have helped to make cities in the North Central States. The cities are called river ports. St. Louis is the largest of these river ports. In 1764 the great city that we know as St. Louis began as a trading post—a little store in the woods.

In those early days canoes brought furs to the trading post. The fur trade now continues and it sometimes uses the airplane. Raw furs come from many states and from foreign lands. St. Louis has the only business in the United States that prepares Alaskan sealskins for sale. Dealers from many cities come to buy furs at the St. Louis fur market.

Boats on four rivers bring trade to St. Louis, and the city is also the second largest railroad center in the United States. It has crops and animals from the Mississippi Valley farms, lead and zinc from Missouri mines, coal from nearby Illinois, water power from dams in the Mississippi, and oil by pipe line from Oklahoma and Texas. These are some of the reasons why this city, "surrounded by the United States," has more than two thousand factories. St. Louis makes boots and packs meats.



More corn than wheat is grown in South America. Which of these grains is grown in Canada?

The city is proud of its Shaw Gardens and its Jewel Box. The Shaw Gardens have the largest collection of plants in the world. The gardens cover many hundred acres. The garden called the Jewel Box is a wonderland of blooming flowers. St. Louis people say that "to cultivate a garden is to walk with God."

East St. Louis. Opposite St. Louis is its Illinois neighbor, East St. Louis, part of the St. Louis Metropolitan District. East St. Louis makes chemicals, bricks, supplies for oil well companies, and many other products.

Peoria. The second city of Illinois is a kind of smaller sister to St. Louis and Chicago. Peoria is on the good Illinois river waterway between Chicago and the Mississippi. Caterpillar tractors and many other farm machines are made in Peoria.

The Twin Cities. At the Falls of St. Anthony on the Mississippi River stand Minneapolis, largest of Minnesota cities, and St. Paul, the state capital. These "Twin Cities," as they are called, touch each other as do two yards or two fields.

In 1820 lumber was being sawed by the force of running water at the Falls of St. Anthony. In 1823 the first steamboat tied up below the falls. Its cargo of supplies for Fort Snelling, a United

States Army Post, was unloaded and carried in wagons to the fort.

When the prairies had been plowed and planted to wheat, the wheat was brought to the falls to be shipped by boat or to be ground for flour. Today Minneapolis, Minnesota, and Buffalo, New York, are the two largest flour-making cities in the United States. Minneapolis also leads in crushing flaxseed to get linseed oil, used in making paints and linoleum. The cake that is left when the oil is pressed out is excellent for cattle food. Minnesota and North Dakota grow three out of every five pounds of flaxseed we use.

St. Paul has many factories. They print law books, make cabinets for refrigerators, batteries for automobiles, and they assemble automobiles.

St. Paul has large stockyards and is one of the nine great stockyard and meat-packing centers in the United States. The other centers are Chicago, St. Louis, Kansas City, Denver, Fort Worth, Omaha, St. Joseph, and Sioux City.

The Twin Cities have a 9-foot depth of water in the Mississippi, enough to float boats. This helps business in Minneapolis and St. Paul and in the river towns to which the boats go.

1. Use a map to locate the nine great stockyard and meat-packing centers. Can you give reasons why these cities are important in the meat-packing industry?

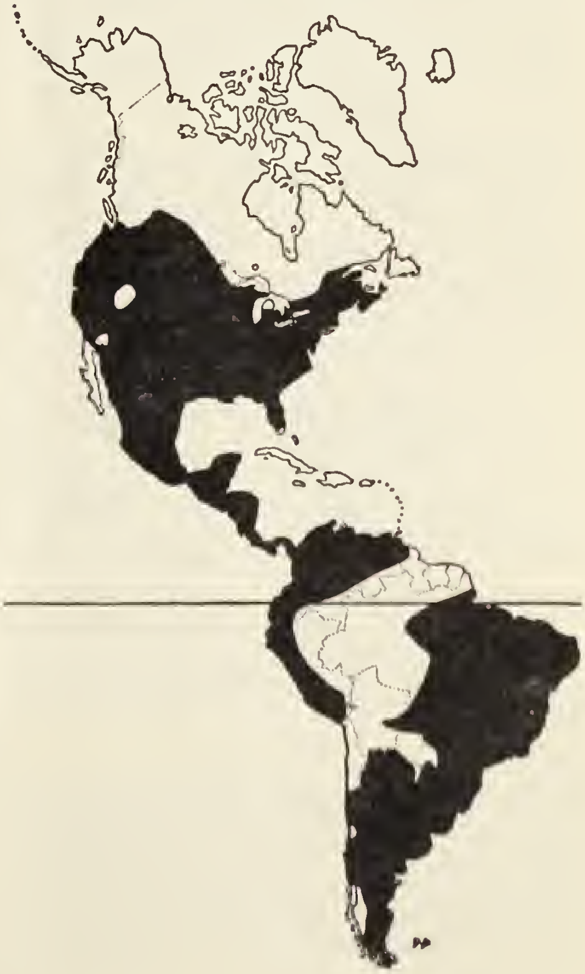
Missouri River cities. Before there were any railroads west of the Mississippi River, canoes carried furs on the "Great Muddy Water," as the Indians called the Missouri. Then came the little steamboats of long ago. They helped to start river towns. From these towns wagons carried the goods inland. Then railroads were built to these steamboat towns to get their trade, but the boats on the lower part of the river are bigger and better than ever.

We might now call Great Muddy the meat-packing river. At its mouth is St. Louis. As we go upstream, we come to Kansas City, St. Joseph, Omaha, and Sioux City.

We might also call Great Muddy the grain market river, because all these river cities have grain elevators and a great trade in wheat, oats, and corn.

Greater Kansas City. There is one city with two city governments and two

The meat producing area is large in our hemisphere.



names—Kansas City, Missouri, and Kansas City, Kansas. Its stockyards are second only to Chicago in the number of cattle received. Most of these animals are born on the Great Plains and live there for a time. They come to the Corn Belt, eat, and grow fat and tender. Next they go to the stockyards and then to meat stores. You see them when you ask for a pound of steak or a can of corned beef.

Greater Kansas City is one of the largest grain markets in the world, and Kansas City millers make flour and other wheat products for our use.

Omaha. The largest city of Nebraska is Omaha. On just one day in January, Omaha received at its stockyards 63,333 hogs to be made into pork roasts, pork chops, pork sausage, and dozens of other useful products. In one week the Omaha packing plants shipped 1,200 railroad cars loaded with meat.

One factory in Omaha has bought as many as twenty thousand bushels of grain in a single day. Alcohol is made from the grain. The alcohol is used in producing synthetic rubber.

Sioux City. Three states meet at Sioux City, the last of the Missouri River stockyard cities. Sioux City makes some butter and grinds flour. River boats on the Missouri have helped to make the city a wholesale buying center.

1. Locate Sioux City on a map. Name the three states that meet near this city.
2. Why are the Missouri River cities so much alike?

Ohio Valley cities. The industries of the Ohio River cities show the relation of these cities to mineral resources—coal, iron, and clay. Starting at the north, we have East Liverpool, Steubenville, Bellaire, Marietta, Ironton, Portsmouth, Cincinnati, Evansville. River boats float Pittsburgh steel, and Pennsylvania and West Virginia coal down the river to all of these cities. Clay banks and coal are the material for pottery and other earthenware products. Now it is plain why these river cities have so many iron and steel works, machine shops, and pottery plants.

Cincinnati has many factories that supply the South, especially with machinery and products of clay. Evansville, right beside Indiana coal mines, has long been a lumber market for the good hard woods of the Ohio Valley.

Other North Central cities. The North Central States have many cities that are not lake ports or river ports. Ohio, Indiana, and Illinois, the three states between the Ohio and the Mississippi rivers, have much land that is good for farms. Each state has important coal mines. Iron and steel are made nearby at Chicago, Cleveland, Pittsburgh, and Youngstown. Pipe lines for petroleum and natural gas cross these states. The land is nearly level, so that railroads can run in all directions—fast trains that go to Chicago, St. Louis, New York, New Orleans, San Francisco, and also freight trains that take the heavy cargoes to lake ports and river ports. It is easy to understand why Ohio, Indiana, and Illinois have so many inland cities.

At the eastern end, Youngstown and Warren are in an open valley between Cleveland and Pittsburgh. They are smoky with blast furnaces and steel mills. Nearby is Akron, which makes so many tires and other rubber products that it calls itself the "Rubber Capital."

Indianapolis became Indiana's first city chiefly because it is the state capital. The city gets plenty of coal for its factories from Indiana mines. Doctors everywhere in the world use medicines made in Indianapolis. The city is also an important meat-packing center.

Columbus, Ohio, has grown for exactly the same reasons as Indianapolis. Many departments of our National Government have offices in the city. Ohio State University is at Columbus. Here, also, are over 500 factories which make many different products.

In Michigan, Battle Creek is a famous health resort, and Grand Rapids is noted for its furniture factories. Furniture manufacturers show samples of their furniture in the Grand Rapids furniture fair. Buyers for department stores and other furniture dealers come to Grand Rapids to buy furniture.

County seats. The states are divided into smaller areas called counties. One town in every county is called the county seat because it has the courthouse with offices for the people who take care of the government of the county.

The future of the North Central States. The North Central States will continue to be the bread basket of the United States. They will grow crops not only for food, but also for rubber, for oil, and for a thousand other uses, but, like the people of the South, they must stop losing their land by wind erosion and water erosion. And these states will surely keep on digging coal, digging iron ore, making steel, and making machines and more machines. They have raw materials and industries. Two magic words for you to remember are synthetics and plastics.

Something to Do

1. Name eight advantages St. Louis has for manufacturing. How many of these advantages does East St. Louis, Illinois, have?

2. Explain how this fact helps to make Minneapolis and St. Paul distributing centers: The Twin Cities have a 9-foot depth of water in the Mississippi River.

3. Choose one of the river ports of the North Central States and make a report on it.

4. Make a list of the capital cities of the North Central States. Learn to write their names with the states.

5. Complete the following statements:
   a. Two reasons for the growth of the Twin Cities are ———.
   b. Lake and river ports handle much freight because ———.
   c. Four important meat-packing centers along the Missouri River are ———.
   d. The four steps in producing meat are ———.
   e. Missouri River cities show relation to their location near farming areas in two ways: ——— and ———.
   f. Ohio River cities show relation to mineral resources in three ways: ———, ———, and ———.

A Short Quiz

Column I is a list of river ports and other inland cities of the North Central States. Column II is a list of industries and facts which help to make the cities important. Copy Column I, then write the industry or fact for which the city is best known from Column II.

Column I	Column II
1. St. Louis	a. farm machinery
2. Peoria	b. wholesale center
3. Minneapolis	c. steel
4. Kansas City	d. stockyards
5. Omaha	e. health resort
6. Cincinnati	f. largest river port
7. Youngstown	g. furniture
8. Akron	h. meat packing
9. Battle Creek	i. rubber
10. Grand Rapids	j. machinery and pottery

Stories You Will Enjoy

"Hello, the Boat!" by Phyllis Crawford—Holt

Thimble Summer by Elizabeth Enright—Rinehart

Winter on the Prairie by Alice Bertha Curtis—Crowell

Corn, Wheat, Meat, and Milk

Have you ever seen broad fields of green corn and acres of golden wheat? To neighbors in our North Central States corn and wheat fields are common sights. So, too, are stockyards and feeding pens for cattle. Herds of cows are part of the picture also, for there are more dairy farms in this area than in any other part of the country. The label, "food basket of the nation," truly fits this group of states in the north central part of the United States.

Different kinds of work are needed to produce corn, wheat, meat, and milk. On the next four pages the artist shows some of the steps that lead from raw materials to the marketing of these crops.

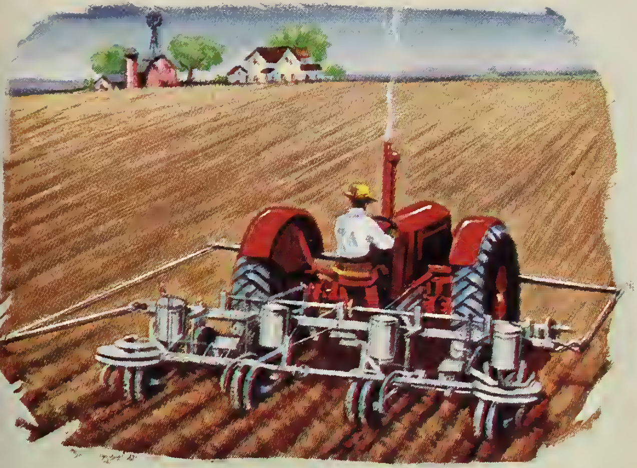
Study the panel on corn, then answer these questions: what work is done in the fields before seed corn is planted? what kinds of machinery are used in growing and harvesting a corn crop? Corn is an important part of our food. How many reasons can you give to prove this fact?

Six pictures tell the story of wheat from seed to market products. Drills sow, combines harvest and thresh, elevators store, and mills grind the grain into flour. Then bakeries turn the flour into bread, rolls, or cakes for consumers. What other products of wheat can you name?

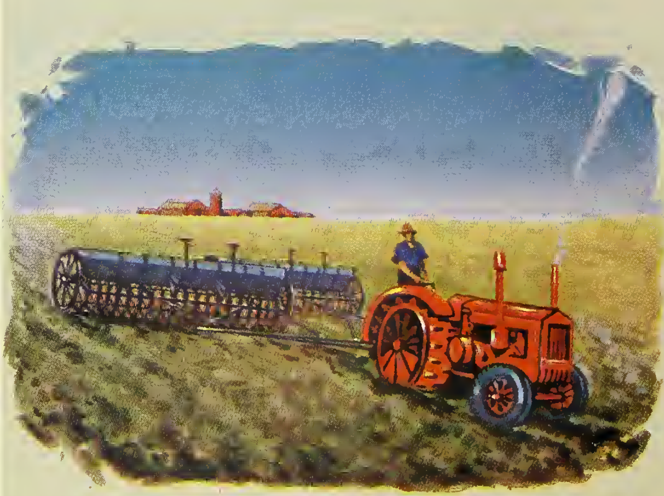
The picture story of meat starts with a herd of cattle on a ranch. Why is a windmill part of a ranch scene? From pasture to feed lot the cattle travel by train. What part does the feed lot have in our story of meat? The picture of the butchers shows markings or stampings on the sides of beef. What do such marks mean? Name different cuts of beef that you can buy in a butcher shop. From what animals do we get pork, mutton, and other kinds of meat?

The fourth panel in this series shows the steps or processes in milk production. Notice the silo in the first picture. Why do most dairy farms have silos? In many dairy barns, machines are used to milk the cows. The milk is pasteurized before it is bottled and delivered to your home. Schools, restaurants, and stores use many quarts of milk. How many milk products can you list?

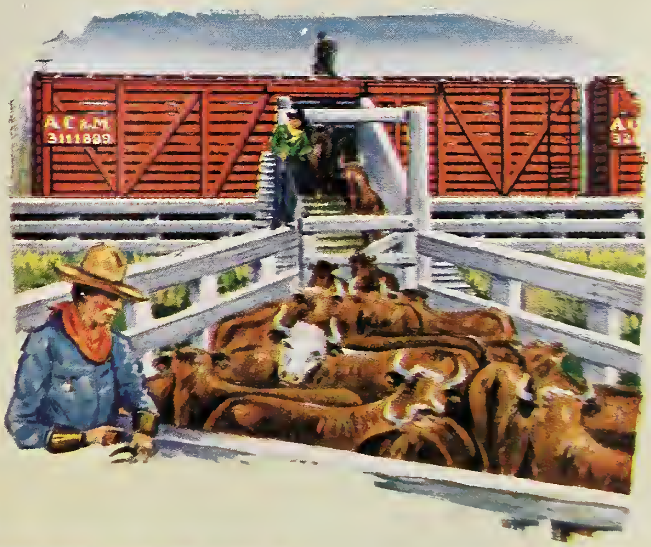
Corn

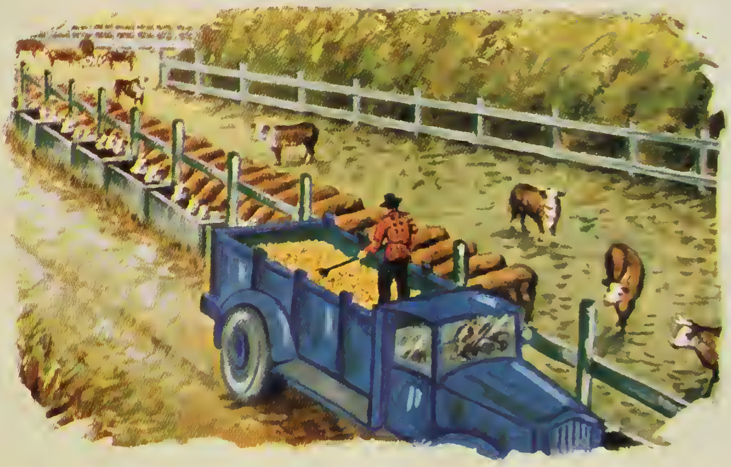


Wheat

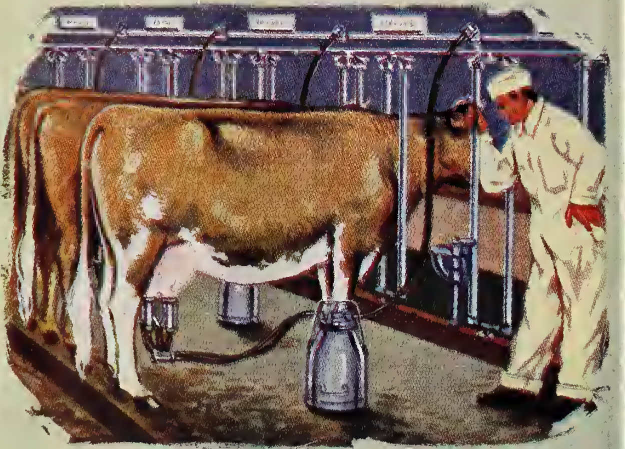


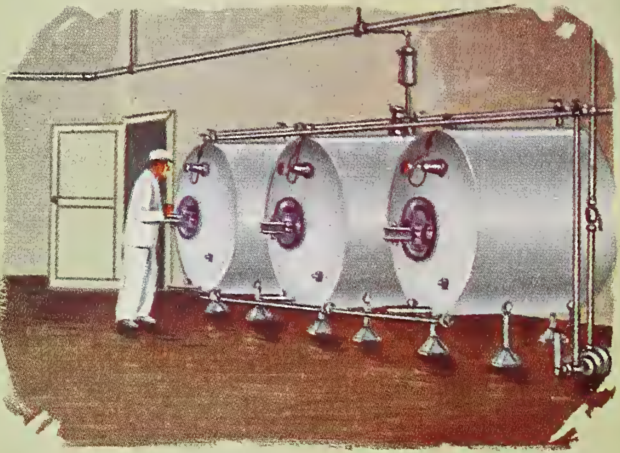
Meat

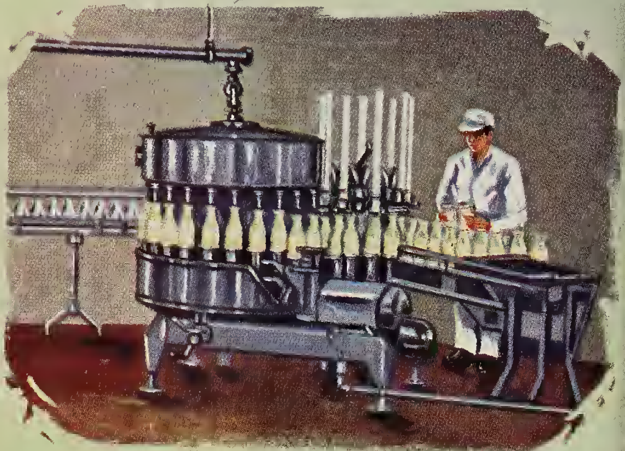


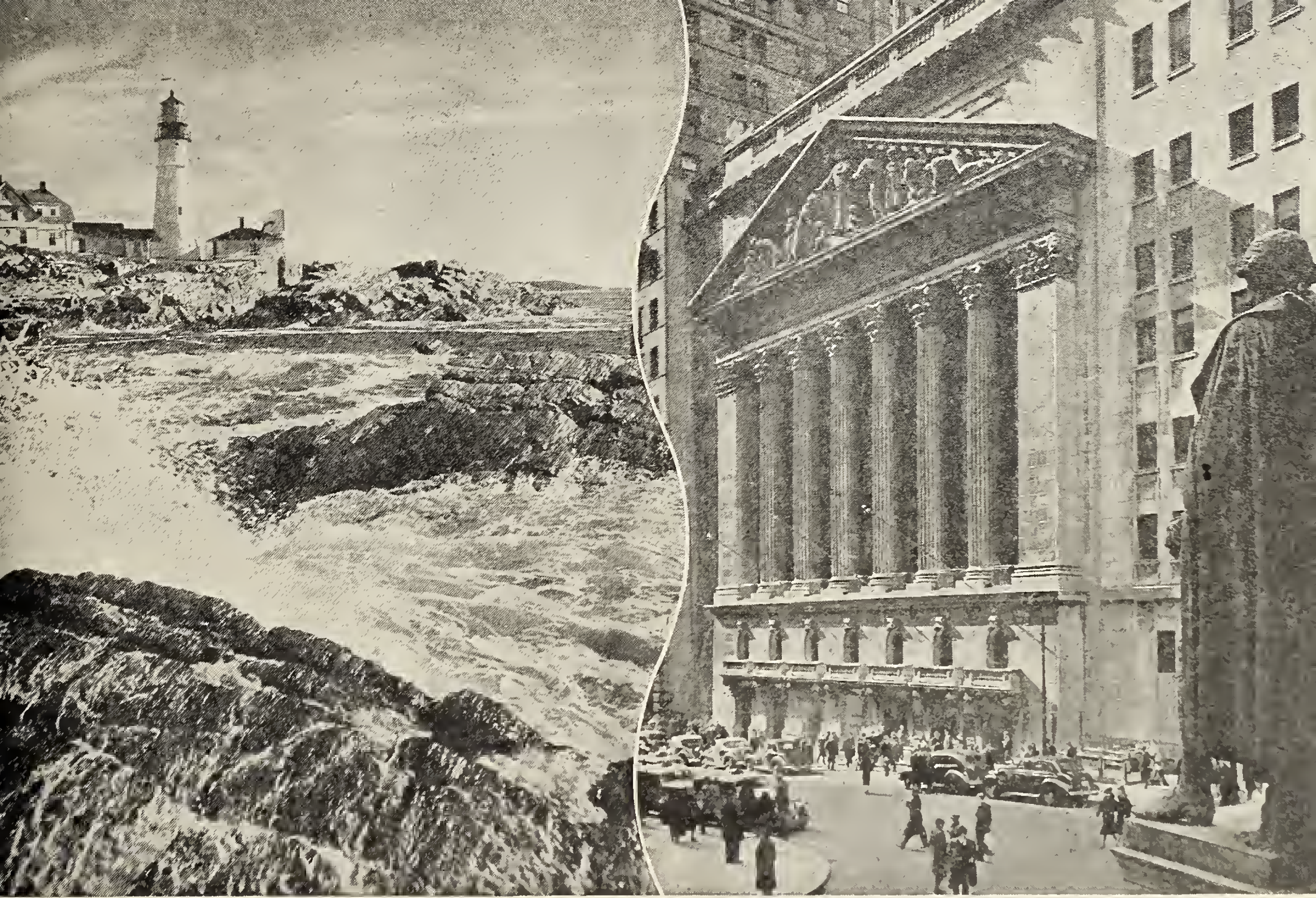


Milk









Ewing Galloway (left), Samuel H. Gottscho (right)

Maine's rock-bound coast and New York's busy Wall Street are contrasts in the Northeast corner. They are also alike. Both are guides, the lighthouse for sailors, and the stock exchange for financiers.

Chapter 28

The Northeastern States

The northeastern corner. The northeastern group of states is a rather small package tucked into the northeast corner of our country. Six of the states—Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, and Connecticut—are always referred to as New England. The other three states—New York, Pennsylvania, and New Jersey—are called Middle Atlantic States. The nine states together are only a little larger than California, but they have five times as many people. They have one-fourth of the population of the United States.

The land. Strips of land and water that you already know extend from the Southern States into the North Atlantic States—Appalachian Plateau, Ridges and Valleys, Great Appalachian Valley, Piedmont, Atlantic Coastal Plain, lagoons or bays, barrier beaches, and Continental Shelf. Farther to the north and east are other highlands—Catskill and Adirondack mountains in New York, Green Mountains in Vermont, White Mountains in New Hampshire. Mt. Washington in New Hampshire is the highest of the peaks, 6,293 feet.

1. Locate by giving the latitude and longitude of the northeastern group of states.

Locate the White Mountains, Green Mountains, Mt. Washington.

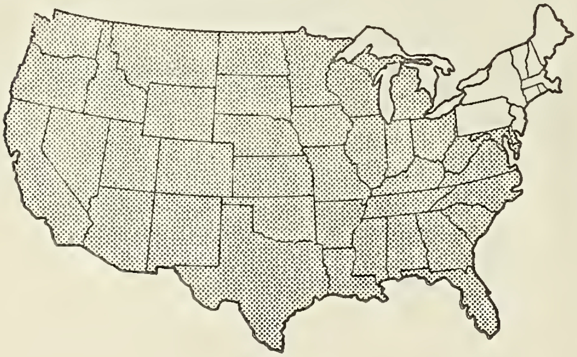
2. Note the many lakes in the Northeastern States. Which state has the Finger Lakes?

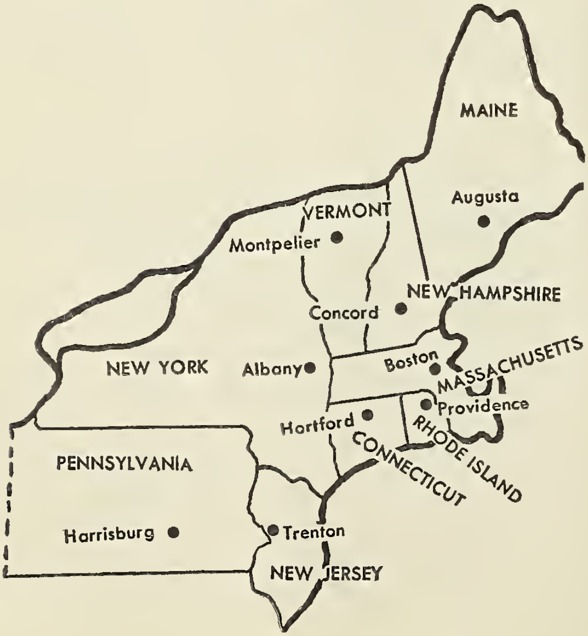
3. Why do you think Pennsylvania and New Jersey have fewer lakes than the New England States?

4. What natural regions or divisions of land are there in the Middle Atlantic States?

What about the weather? The newspapers begin writing about the "dry spell" if any part of the Northeastern States has two or more weeks without rain. At least 3 inches of rain can be expected every month—more in spring and summer. The cold winters have plenty of snow for sledding and ice for skating. Everywhere, except in the higher mountains, the summer is warm enough for many crops.

How many persons call this small package of states their home?





Where the people live. This is the smallest group of states. The metropolitan districts map shows areas of space and of dense population. Why is there so much empty space and why are there so many cities? We shall find the reasons as we read.

1. Use the map showing the metropolitan districts in the United States to note the crowded spots in the Northeastern States. Why do you think the coastal plain, the Hudson Valley, and the coal fields of Pennsylvania have become densely populated areas?

The forest. The Northeastern States were an almost unbroken forest when Europeans came here. On the high mountains were pine trees, spruce, hemlock, and other conifers.

In the valleys and lower hills there were oaks, poplars, maple, cherry, birch, hickory, and many other kinds of hardwood trees.

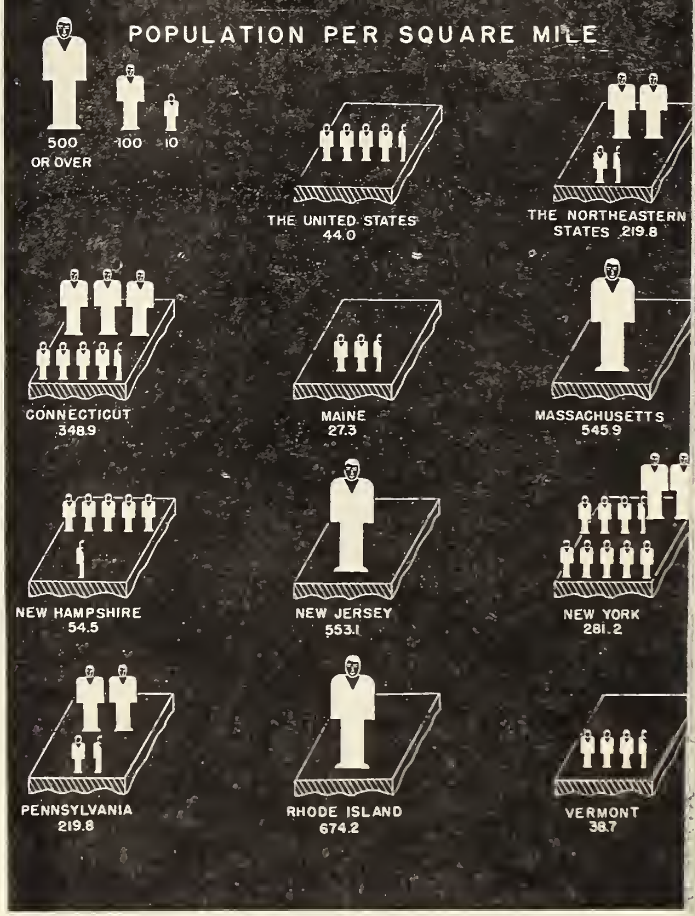
We call this wealth of trees the forest primeval, or the original forest. Before the European settlers came, the trees had never been touched by anything but the Indian's stone axe. The forest was both good and bad for the settler. It gave him tall pine trees which he could sell for masts of ships. It gave plenty of wood for houses and barns, for shipbuilding, barrel staves, and lumber to export.

The forest was also a nuisance to most of the early settlers. It took the early settlers years to cut the trees and clear the land for two or three small fields. Often they burned big logs to get them out of the way, and when they had cleared some space, the fields were often small and stony. Families worked hard, and they made a living on the small, stony farms. In the days of George Washington, when farmers had no machines and their wives spun yarn and made cloth on hand looms, each farm was also a kind of little factory.

Farm machinery came into use, but machines cannot be used on the small, stony hill farms. So thousands and thousands of farms were abandoned. The people went west to the smooth, level land, or they went to town and worked in factories. Many parts of the Northeastern States had more farmers a hundred years ago than now. Many farms have grown up in forest again.

The Northeastern States once led in lumbering, but now they produce only about a third as much as they did 50 years ago. It was another case, such as we saw in the North Central States, of "cut out and get out."

The United States Government is helping the future lumber supply by buying land for national forests in the Northeastern States. The state governments are doing the same for their state forests. Even some towns and counties own forests and make money by selling wood. The people are taking more interest in growing and protecting trees.



Compare the population per square mile of the Northeastern States with that of other groups of states.

Spruce is one of the best woods for making paper. The early lumbermen let the spruce stand; they cut white pine, because it was more useful for buildings and for ships. Today Maine stands second only to Washington State in the production of spruce pulpwood for making paper. Some paper companies take care of their forests. They cannot move their mills.

1. Name the uses of wood in your neighborhood.
2. Why have so many New England farms been abandoned?
3. Name the industry and its chief raw material in which Maine is a leading producer in the United States.

The dairy farm. Most of the farmers who remain are producing milk for people in the nearby cities. Raising cows suits the weather. It suits the land. It suits the market.

Northeastern weather, somewhat cool, and with rain every few days all summer, just suits grass. Many pasture grasses grow best in cool, moist weather.

Grass that grows on a rocky field or hillside is as good as grass that grows on level land. As the cow walks among the rocks, she finds a bite of grass here and a bite there.

Corn for the silo will grow in most parts of the Northeastern States. Thousands of silos are filled with chopped corn for dairy cows to eat in winter.

We like to drink milk while it is fresh and sweet, but milk sours quickly. Therefore, dairy farms that sell milk for city use need to be near towns and cities. The Northeastern States have more cities, many more cities, than any other group of states. People who live in the cities need lots of milk. That is another reason why milk is the leading crop in this group of states.

Most of the farm land of the Northeastern States is rolling or hilly and resembles that of the dairy section of the North Central States, or the Piedmont of Maryland or Virginia. Vermont has more milk per capita than has Wisconsin, our leading dairy state. Only Wisconsin and Minnesota produce more milk than does New York State.

1. Give three reasons why the production of milk is very important in the Northeastern States.
2. Why is the silo important in areas with a short growing season?

The Atlantic Coastal Plain. The coastal plain includes all of New Jersey east of a line from Trenton to Elizabeth, all of Long Island, and the Cape Cod section of Massachusetts. We know that the sandy soils of the coastal plain suit truck crops. Fifteen million people live within 60 miles of Trenton, New Jersey. Each person should eat some fresh green vegetables every day to keep in good health. Do you see why South Jersey has thousands of truck farms that grow millions of dollars worth of tomatoes and many other garden crops?

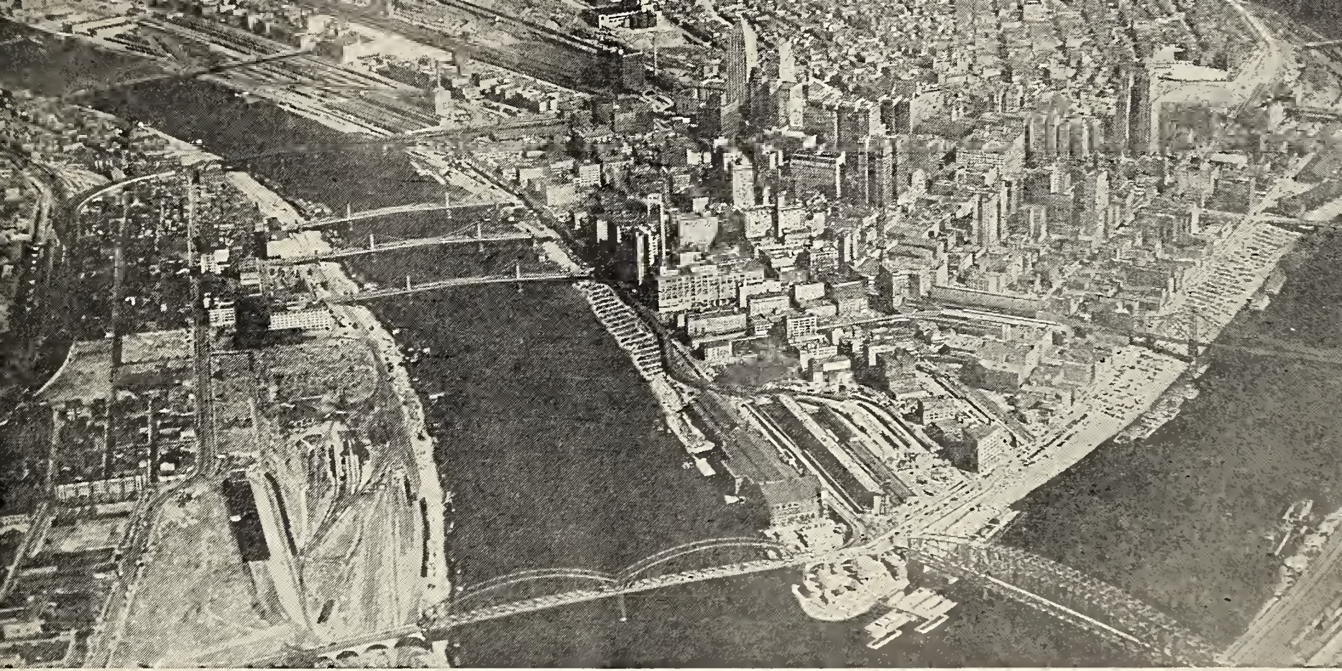
Cranberries. If you enjoy cranberry sauce, you can thank Massachusetts, Wisconsin, and New Jersey for growing the berries. Cranberries like to grow in a bog—a swamp where the soil is wet, soft, and sponge-like. Southeastern Massachusetts and central New Jersey have plenty of such low-lying land. The land can be flooded. This kills weeds and keeps the cranberry plants from freezing in spring or fall. This swamp land or "cranberry bog," as it is called, must be drained to permit the berries to ripen.

Fruit along the lakes. The Finger Lakes district of New York State and the lowlands south of Lake Erie and Lake Ontario are crowded with orchards and vineyards. New York has more apple trees than any other state, and grows many peaches. It is second only to California in the production of grapes.

1. Think of what you learned about the influence bodies of water have on growing fruit. Now tell why the Finger Lakes district in New York State is crowded with orchards and vineyards.

Special crops. There are several localities with special crops. The valley of the Aroostook River, in northeastern Maine, has some of the good, light soil that potatoes like best. The summer here is cool, rainy, and not very sunny—excellent for potatoes. This valley grows more potatoes than does any other state. The potatoes go to city markets in winter by the train load. Many are used as seed potatoes and are planted by farmers as far south as Argentina.

The valley of the Connecticut River in Massachusetts and Connecticut has some smooth, sandy soil that was once



Pittsburgh Chamber of Commerce

A general view of Pittsburgh, looking east, shows "The Point" in the foreground. Here the Allegheny River on the left, and the Monongahela River on the right, join to form the Ohio.

the bed of a lake. Streams carried sand into the lake. This sandy soil will grow good cigar tobacco if the grower puts a cover of cotton cloth over the field. The cloth protects the plants from winds, keeps the air moist, and helps the plant to grow leaves that are good for making cigars.

Some of this valley land is planted in onions. But New York State, which grows about one in every five onions we eat, is far in the lead.

"Down East," as northeastern Maine near the coast is called, has plenty of land called barrens. The land is barren of trees, but thousands of acres are covered with blueberry bushes. Most of the blueberries that are canned and sold to bakeries for good blueberry pies and muffins come from the wild bushes on the so-called barrens where the sandy soil suits the blueberry plant.

1. Give reasons for:
    - a. the large number of truck farms in New Jersey
    - b. cloth covers on tobacco fields
    - c. the fact that potatoes are the leading crop in the Aroostook Valley

The "coal forests." Ages ago when the earth was still young, the weather mild, and the air heavy with moisture, giant ferns and other tree-like plants, and much moss, grew in swamps where we now find the Appalachian coal fields. The plants fell down and were covered by water. Under water they decayed partly, but not entirely. The undecayed remains formed great beds of peat. That was long ago. Then streams covered the peat with sand or mud. After millions of years, the sand and mud hardened into rock. Under the pressure of the rocks, the peat was changed into coal. Thus the swampy forests of long ago became coal.

Streams, ever busy at their job of carrying the soil to the sea, gradually wore through the layers of rock, and some of the coal was exposed. In thousands of square miles in western Pennsylvania the layers of coal lie flat, as in

West Virginia and Kentucky. Miners dig into the side of a hill in which the coal lies close to the surface.

Coal is king in Pennsylvania. Pennsylvania with its neighbor, West Virginia, has probably the richest beds of good bituminous coal anywhere in the world. These two states mine half or more of the coal we use.

When people went to live in the valley of the Susquehanna and Schuylkill rivers in northeastern Pennsylvania, they found black stones that would burn scattered over the countryside. This was anthracite coal, the hardest kind of coal. It burns without smoke.

The anthracite region of Pennsylvania contains the only large bed of this coal in the world, so far as we know. Pennsylvania anthracite is one reason why the Northeastern States lead in manufacturing and in number of factory workers. More than fifty million tons of anthracite are mined each year. The coal goes to many states.

1. Learn to write the terms "bituminous" and "anthracite." What do they mean?

Slate and cement. The largest slate mine in the world is between the Lehigh and Delaware rivers in eastern Pennsylvania. Pennsylvania and Vermont quarry nearly all of the slate that is so useful for making roofs and blackboards. In Pennsylvania, the Great Appalachian Valley, called the Lehigh Valley near the Delaware River, leads also in making cement. Cement is made by burning limestone and slate or shale in a long furnace.

Oil and gas. The first petroleum in the United States came from a well on Oil Creek, Pennsylvania, near Titusville. Petroleum was called "coal oil," and was used in lamps for light and in oil stoves for giving heat. For many years the Pennsylvania oil field, which includes parts of New York State, Ohio, and West Virginia, led in the production of petroleum.

Now Pennsylvania stands about tenth among the states that produce oil. "Why this decline?" you may ask. Oil occurs in pockets or pools in the earth. A well will yield oil so long as oil is in the pocket. Pennsylvania wells have been flowing many years, and the pockets are becoming empty. But the good "Pennsylvania Crude" still makes best quality gasoline and oil for automobile engines.

Natural gas, the best of all natural fuels, is usually found with petroleum. Nature made them, so we think, from the bodies of small sea animals and fish that lived in the sea long ago and were covered with mud on the sea bottom. The nearness of oil to gas is not always a blessing. When men dig for oil, much gas may blow into the air and be wasted, unless men are careful to get it into pipes. Millions of dollars worth of it has been and is being wasted, but the Pennsylvania field still has enough gas to get fourth place, after Texas, California, and Louisiana.

1. Pennsylvania produces less petroleum now than it did years ago. Why?
2. Discuss with your classmates the meaning of this phrase—"conservation of natural resources."

Zinc and granite. Possibly someone in your family has a galvanized bucket. The bucket is made of iron or steel, covered with a thin layer of zinc. Weather does not greatly harm zinc, although weather rusts iron and steel. Northern New Jersey has zinc mines second only to those of Oklahoma.

Granite is a hard, durable rock used for buildings and monuments. Huge quarries at Barre, Vermont, yield much granite and more marble than any other part of our country. Coal, oil, and granite are the most important minerals found in the Northeastern States.

Something to Do

1. Learn to write the names of the six New England States and the three Middle Atlantic States.

2. Why do you think a part of the United States is called New England? Discuss this question in class.

3. Use the appendix to get the following information:

   a. area and population of Rhode Island
   b. area and population of Texas; of California
   c. area of New England
   d. area of Washington
   e. area of Middle Atlantic States
   f. area of Colorado

4. Write a paragraph on area and population comparisons, using the information you assembled in Item 3, and any other facts you consider interesting.

5. Why do you think the Northeastern States have many people? Why are they an important part of the United States? Make a list of your reasons for this fact and check it as you study the following chapters on this group of states. You may want to correct your list and add other reasons as you read.

6. Choose one of the following topics to talk about in class. Make a list of the important points you wish to include in your talk.

   a. Abandoned Farms
   b. Forest Lands of the Northeastern States
   c. Farming in the Northeastern States

7. How many metropolitan districts are there in the Northeastern States? Discuss with your classmates the chief cause or reason for the large number of densely populated sections. Discuss, also, the effect or result of these population centers on the kinds of farming in the Northeastern States.

8. Add to your scrapbooks pictures and interesting items about fishing, lumbering, farming, and manufacturing in the Northeastern States.

Ewing Galloway

Miners must use picks in this slanting vein of Pennsylvania anthracite, 1200 feet below the surface.

9. Use the text, pictures, and other information you may have to help you tell the story of coal.

10. Write five paragraphs comparing the natural features of the Northeastern States and the North Central States. Use each of the following topics.

   a. location
   b. land surface
   c. climate
   d. soil
   e. minerals

A Short Quiz

Match the definitions or locations in Column II with the term or product in Column I. Make a list of the numbers, and with each number write the correct letter.

Column I	Column II
1. trawler	a. Lehigh Valley
2. conifers	b. hard coal
3. bog	c. blueberries
4. anthracite	d. fishing boat
5. bituminous	e. cranberries
6. barrens	f. Connecticut River Valley
7. cement	g. for each person
8. potatoes	h. evergreen trees
9. per capita	i. Aroostook Valley
10. tobacco	j. soft coal

Boston and Maine Railroad

The snow train arrives. Eager sportsmen shoulder their skis and poles and are off for a day of fun. You may want to read about and make a report on an outdoor winter sport.

Chapter 29

The Tourist Business

The snow train. "Snow train for North Conway, Track 19," blares the loud speaker. Hundreds of people pick up bags, snowshoes, skis, and ski poles and hurry to Track 19. They are off to spend the week-end in the White Mountains of New Hampshire.

One railroad out of Boston has carried as many as 24,000 ski passengers during the snow season of a winter. And in New York City, 1,500 to 2,000 people sometimes buy tickets for a certain snow train. The railroad runs the train in sections to handle this large crowd of sportsmen.

The snow trains may drop their passengers in midmorning at a place where there is good snow for skiing, and pick them up again in the evening. Or the trains may go for longer trips to popular ski slopes in the higher mountains of New England, the Adirondacks or Catskills of New York, the highlands of northern New Jersey, or the Poconos of northeastern Pennsylvania.

Taking care of these winter guests provides many jobs for New Englanders and for the people in the mountains of New York, Pennsylvania, and New

Jersey. These people of the highlands welcome the skiers to their hotels, tourist houses, and cabins. They floodlight the slopes for night skiing. They build ski tows which pull the skier to the top of the hill. This saves a lot of time and increases the number of runs one can have in a day.

The New Englanders make steep roads down the mountain where sleds can go around curves at breath-taking speeds. They keep trails free of bushes so that people on snowshoes can use the trails. They keep the ice-covered lakes clear of snow for ice hockey, skating, ice boating, and skate sailing. In winter there are contests in fancy skating, skate racing, ski jumping, and tobogganing.

Summer playgrounds. The summer vacations are quite different. The villagers, the farmers, and the hotel keepers of the Northeastern States get ready for many more thousands of summer visitors than come for winter sports. Many persons prefer to vacation in summer.

Maine alone has 600 or more summer camps for boys and girls, for grown folks, and for families. Many thousands of visitors from many states spend days, weeks, and even months here. The campers swim, fish, and go boating on mountain lakes. They photograph wild animals, they take walks, climb mountains, or they just rest among trees and beside beautiful lakes.

Some of the summer people take long canoe trips by lake and stream. They often employ a local guide and they camp along the way. Some go on hiking trips on one or more of the hundreds of trails that crisscross the mountains. Perhaps the hikers start down the Appalachian Trail that follows the Appalachians from Maine into Georgia. On the trails are huts where the hikers can buy food and a place where they can sleep for the night at low cost, or sometimes with no cost at all.

The tourist business. These visitors, both winter and summer, are tourists, that is, persons who travel for pleasure. Tourists spend hundreds of millions of dollars each year in the Northeastern States. Caring for these guests and helping them to have pleasant vacations provides jobs for thousands. Taken all together, we call this the tourist business or the tourist industry. The industry earns more money for New England than her paper mills or her cotton mills earn, and more money for New Jersey than she gets from her huge oil refineries. The tourist industry is by far the largest industry in New England and New Jersey.

If you like figures, here are some. In one year 1,200,000 automobiles bearing tags from other states entered New England. These cars had 3,400,000 passengers. The tourist business of the Northeast is indeed a big business.

1. Make a list of the different kinds of jobs made by caring for tourists. Check your list and discuss the tourist industry with your classmates.

Historic spots. Every American, no matter where he lives, hopes that some time in his life he will stand "with the Minute Men" on the Bridge at Concord, Massachusetts. He wants to see Plymouth Rock where the Pilgrims landed; to visit Valley Forge when the snow is deep and the weather is bitter cold as it was during the terrible winter of 1777–1778; to walk across the battlefield at Gettysburg where Pickett made his fearless charge; or to stand near the spot where President Lincoln gave the Gettysburg Address. These are thrilling experiences to most persons.

Maine Development Commission

Sailing a boat is recreation for many persons.

The Northeastern States have many places mentioned in your history books. We have named only four of these historic spots; they are samples of the other places that we would like to see.

In Philadelphia is Independence Hall. This is the home of the Liberty Bell. Here the Continental Congress adopted the Declaration of Independence. Here our Constitution was born. Here the Congress of the United States met from 1790 to 1800 when Philadelphia was the capital of the United States.

National parks and forests. Mt. Desert Island, Maine, the largest rock-built island on the Atlantic Coast, has great cliffs along its shores. The ocean waves beat against the cliffs, crash and roar as they fall back into the sea, to rise again the next minute. Most of Mt. Desert Island is forest-covered mountains topped by Mt. Cadillac, 1,530 feet, highest peak on the Atlantic coast. Most of this rough island wilderness is now Acadia National Park, owned by the Government at Washington.

1. Can you tell the chief differences between national parks and private parks?

Going to the shore. "Where did you spend your vacation?"

"At the shore, as usual."

This conversation is heard many times each year in all parts of the Northeastern States, but especially in New Jersey and Pennsylvania.

Nature built gently sloping sandy beaches most of the way from Cape May, New Jersey, to Cape Cod, Massachusetts. Along much of this coast there are quiet bays back of the narrow strip of sand that makes the beach.

One might almost say that the beaches were made to order for surf bathing and the quiet waters of the bays were made for fishing, crabbing, and boating. These shore lands are from 10 to 15 degrees cooler almost every hot day than are the lowlands back from the sea.

Land and sea breezes. "It's hot," you say on a sunny morning at the shore. Just then a cool breeze begins to blow in from the water. Why is there a breeze? The same sun shines on the water, on you, and on the land; but the water is coolest of the three because the land warms quickly. This causes the air over the water to be cooler than the air over the nearby shores.

The cooler, heavier air pushes against the lighter, warmer air and causes it to rise. This makes a sea breeze which brings in pure fresh air to the land from off the sea or lake. Now you have the weather reason why the coasts of the Northeastern States are vacation lands for millions of people from warmer inland places. Thousands of people from Pennsylvania and places in the North Central and Southern States have summer vacations, even summer homes, on the North Atlantic Coast.

The Atlantic Coast of New Jersey, most of Long Island, and parts of the New England shores as far north as Maine are almost one unbroken string of cities, towns, seaside parks, and cottages.

Atlantic City is the largest of these vacation places by the sea. Ten million or more persons a year visit this "World's Playground," as the city is sometimes called.

1. What is the population of Atlantic City? How many persons visit this vacation spot each year?

The "stern and rock-bound coast." A certain man spends several hours a day for many days in summer just sitting on a rock that juts into the sea near Gloucester, Massachusetts. He likes to watch the waves as they rise, rush, splash, and foam on the hard rocks. He likes to watch the waves fall back and rise up to come again. This seems to rest the nerves of this city man. After such a vacation by the sea he is ready to return to another busy winter in New York City.

Hills and mountains come down to the sea almost everywhere along the Atlantic coast from Boston to West Quoddy Head, the eastern tip of Maine. They form the "stern and rock-bound" coasts of New England.

The straight-line distance from Portsmouth, New Hampshire, to West

New Hampshire is famous for its scenery—forest-covered hills and rough mountains, rushing streams, waterfalls, and beautiful lakes. The rivers and mountain lakes are a source of power.

New Hampshire Planning and Development Commission

Quoddy Head is about 220 miles. If you walked along the shore of Maine, however, and around the edge of each island along the coast, you would travel about 3,478 miles.

Maine has 1,000 or more off-shore islands with names, and several thousand more of rocky bits that stand above high tide but have no names. Some persons say that Maine has at least 4,000 islands.

If you like a spot for your home where you can be alone, you may buy one of these islands and go back and forth to the mainland in your boat. One side of your island may be the open sea with big waves and rough water. On the other side will be the quiet back bay where you can safely go boating and see fish, crabs, and maybe a lobster or two swimming about.

1. Follow on a map the "stern and rock-bound" coast of New England. Why is it called "rock-bound"?

Coast lands of the Northeastern States are a summer playground. Why are these shore lands usually cooler than lowlands away from the sea?

Atlantic City Chamber of Commerce

Something to Do

1. Draw or collect pictures to show winter sports in the Northeastern States. Add them to your scrapbook.

2. Look in magazines for advertisements of summer camps for boys and girls. Use a map to find the ones located in New England.

3. Choose a camp for your summer vacation. Plan the trip from your house to the camp. Now prepare a talk for your classmates on your trip; use maps and pictures to help you describe what you expect to see on your way to camp.

4. You may want to read about one or more of the historic spots in the Northeastern States. Make an outline of the interesting points. Use the outline to tell the class what you read.

A Short Quiz

Number from one to five on your paper. Read the statements below, choose the best ending for each and write the letter of the ending with its correct number.

1. The White Mountains of New Hampshire are well known for
   - a. their deposits of granite.
   - b. the winter sports held there.
   - c. excellent trout streams.
2. The Appalachian Trail, from Maine to Georgia, is used by
   - a. persons taking canoe trips.
   - b. campers for fishing.
   - c. hikers.
3. Caring for tourists is known as
   - a. the tourist industry.
   - b. summer vacations.
   - c. traveling for pleasure.
4. Cool sea breezes along the shore lands are caused
   - a. by air blowing from the land to the sea.
   - b. by the fact that the air over the land is warmer than the air over the sea.
   - c. by the fact that the air over the sea is warmer than the air over the land.
5. Breezes blow from the land to the sea at night because
   - a. the land cools more quickly than the sea, and the cool, heavy air causes the warm, light air to rise.
   - b. the wind causes the breeze to turn.
   - c. the air over the sea is heavier than the air over the land.

Fairchild Aerial Surveys, Inc.

For three centuries fishing has been the principal occupation of the people of Gloucester. Taking care of visitors is another business because the town is a popular summer resort.

Chapter 30

New England Towns and Factories

Factories and factory towns. You may be driving along a road in Massachusetts, Rhode Island, or Connecticut. You see a few small farms, but mostly you see woods. Then over the top of the woods you see the tall smokestack of a factory, perhaps two or three smokestacks. You drive on over a low hill, and there before you is a town, the home of several thousand people and several factories.

"Whee-e-e! Whee-e-e! Whee-e-e!" That is the whistle of a New England factory. It blows to tell the workers of the town when to start work. Most of the people in New England earn their living from factories. The lower part of New England is dotted with factories and factory towns.

Of course all the people in a factory town cannot work in the factories. The storekeeper does not work in a factory. His job is to buy and sell the things factory workers need. The New England bus driver does not work in a factory. He takes the factory people to business and brings them home. The New England banker does not work in a factory. He looks after the safe-keeping of money

General Foods Corporation

It is a busy time at the pier in Boston, Massachusetts, when handcarts meet the trawler fleet.

for all the people in the factory neighborhood. The New England school teacher does not work in a factory. She teaches the children of those who do.

As long as the factory hums with business, as long as its whistle blows in the morning, all the townsfolk have jobs. But if the factory shuts down, everybody has less money, and there are hard times. If the factory stays shut, people may move away.

1. You have learned that it is better for farmers to produce several kinds of crops rather than to depend on one crop. Do you think it is better for a town to have more than one industry? Why? What industry or industries support your neighborhood?

Fish and forests. Why does New England have so many towns and so many factories? Three words—"fish," "forests," and "waterfalls"—help to give one of the answers.

We will begin with the fish and forests. You may think it strange that fish and trees helped start towns and factories in New England. It is an interesting story, as you will see.

A sea rich in food. For the first hundred years after the voyages of Columbus, the big news about America was the story of the good fishing. Ships came from England and France to catch fish here in the early 1500's. New Englanders have always been able to catch many, many more fish than they could eat. The cool New England summers have permitted salted codfish to dry out-of-doors. This cannot be done in warm countries. There fish spoil and become unfit for food in an hour or so after they are taken from the water. But codfish, when salted and dried, are about as hard as a board and keep almost as well.

For more than 300 years the New England fishermen have gone in sailboats to the Grand Banks—several days to go, several days to stay there and fish, several days to sail home. The trip is on one of the stormiest seas in the world.

In the sailing ship days of the 1700's, and the early 1800's, a man who could sail a fishing boat to the Banks could sail a ship anywhere in any kind of weather. The fishing banks were schools where young men learned to be expert sailors. The boats that could weather such a trip could sail in any sea, and the men who built them were good shipbuilders. So, as you can see, the great industry of catching and selling fish brought two kinds of people to the coast towns—fishermen and shipbuilders.

The fishermen on the Banks use power boats now, called trawlers. They drag a heavy net called a trawl along the bottom and scoop up the fish.

There are 25,000 fishermen along the coast of the Northeastern States, most of them in New England. They catch rosefish, cod, haddock, mackerel, menhaden and other fish—nearly a billion pounds a year—and many lobsters. They take most of them to Boston and Gloucester, Massachusetts; to Portsmouth New Hampshire; and to Portland, Maine.

Here we see one reason for New England coast towns—they are the homes of fishermen, of people who supply the things fishermen need, and of people who prepare the fish for market—fresh, frozen, dried, salted, canned, smoked, and ground into fish meal. The menhaden and the heads, skins, tails, and bones of food fish are used to make glue, chicken feed, fertilizer, and fish oil.

1. In what way did the cool New England summers contribute to trading?

The tall pine and the sturdy oak. New England lumbermen went into the forests to get lumber for the shipbuilders. They found white pines—tall and straight—which made splendid masts for ships. They found oak trees which made strong, tough lumber for building the hull, or body of the ship.

New England shipbuilders took the straight pine and the tough oak and made fishing boats called schooners. The schooner is the best small sailboat for work purposes that has ever been invented.

New England trades with the world. Now let us see how the fish, the forest, and the Grand Banks brought new business to the New England coast towns. The New England fishermen loaded their schooners with dried cod and salt herring, and sailed away to South Carolina, to the West Indies, and to Europe to sell their fish. They also carried staves to the sugar planters in the West Indies to make barrels to hold molasses, and for hogsheads for sugar. New England ships also carried masts for ships and good oak and pine lumber for the shipbuilders of England. In Bombay, India, is an old American icehouse. It was built in 1805 when ships from New England were carrying ice to people of the hot lands such as India, the West Indies, and Brazil.

International News Photo

A log is poled from the boom up to the hoist runway and into the mill.

After making such long voyages, the Americans learned how to make larger ships called clipper ships. At that time these were the fastest sailing vessels in the world.

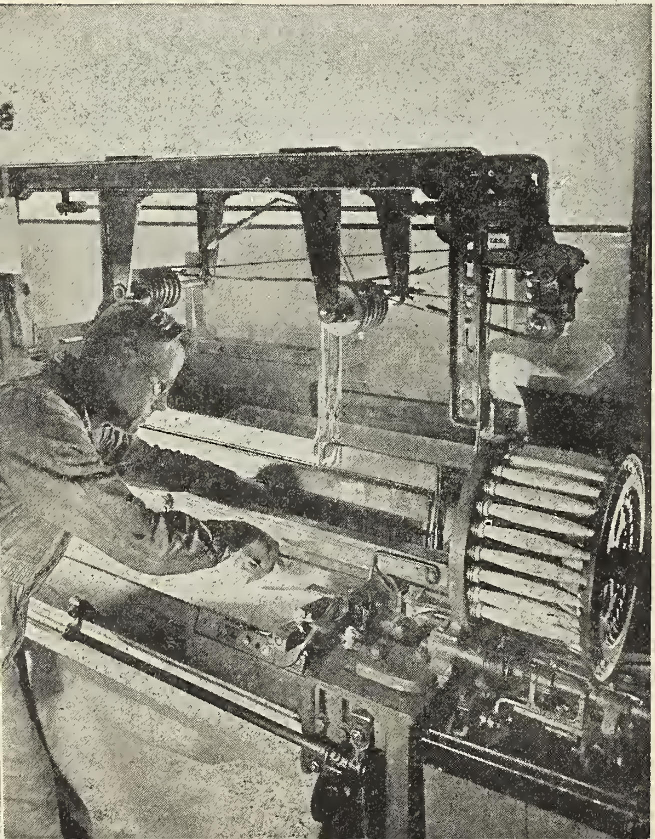
On the way home, New England schooners and clippers picked up sugar, molasses, rum, tea, coffee, silk, spices, raisins, figs, and wines. But most important of all, the ships brought back cotton, wool, hides, and after a while they brought rubber. Ships, shipyards, fish, and foreign trade—dozens of New England coast towns had these things long before there was a railroad or a factory whistle anywhere in the world.

1. What four important raw materials did the clipper ships bring to New England?
2. What kinds of factories do you think were built to use these materials?

From wharf to waterfall. At the same time that the clipper ship trade was at its best, men began to invent spinning machines, weaving machines, and other machines to do work that had been done by hand. One New England shipowner bought a cargo of pepper on the shores of the Indian Ocean. He paid $18,000 for it. He sold the pepper for $126,000. Other shipowners, captains, and crews made big profits from their trading voyages. Some became rich men.

A worker tends a loom. Weaving ranks high in the important New England industries.

Peperell



Then they said to themselves, "We will stay at home now, safe from the dangers of the sea. We will do business here. We will use our money to build factories in which to spin, weave, tan leather, make shoes, saw lumber, and grind grain."

1. Where did the factory builders secure money to start a new kind of business?

The good glacier helped them. For years New Englanders who wanted to farm had a hard time because the glacier had made much of the land too rough and stony for farms. But when the New Englanders wanted to have factories, they found the same glacier had helped them by making waterfalls. You remember how the Great Glaciers gave New England thousands of glacial lakes and hundreds of waterfalls. There are waterfalls in nearly every stream that flows out of the New England hills to the sea. Some streams have many waterfalls.

When the people of New England began to build factories, they needed power to turn their mill wheels. There were the waterfalls, hundreds of them, inviting men to make waterwheels and have the streams do the heavy work. Towns grew up near waterfalls. They are scattered far and wide over New England.

1. How did the glaciers affect the kinds of work people could do in New England?

The mill towns of Maine. Biddeford, Saco, Brunswick, Lewiston, Auburn, Augusta, Waterville, Skowhegan, Bangor, Orono, Calais, Rumford, Millinocket—each of these Maine towns grew up beside a waterfall in one of the five principal rivers of the state. Today these towns are busy with spinning and weaving, with sawing lumber, making paper, wood pulp, or in making small wooden articles, such as spools and toothpicks which can be shipped easily to distant places.

Portland, Maine's largest city, has a deep, safe harbor. Portland serves as the chief seaport for northern New England. Some Canadian trade passes through Portland in winter.

1. Locate on a map the mill towns of Maine.
2. Can you name the five rivers that provide waterfalls for factory power in these towns?
3. Locate Portsmouth, New Hampshire, and Kittery, Maine. Why can these two towns share a shipyard?

New Hampshire's only seaport. Although New Hampshire has only 16 miles of coast, she has an important seaport. Portsmouth builds ships and shares with Kittery, Maine, a United States Navy yard where submarines are built.

Spindles on the Merrimack. A spindle is a small rod or pin used to twist fiber, such as cotton, wool, or silk, into thread or yarn. The Merrimack River in New England is said to "turn more spindles than any other stream on earth." This means that factories get power from the many waterfalls in this river. The power runs machines that spin and weave, and some of this power is used for making shoes. These shoe factories are chiefly at Manchester, Nashua, Lowell, Lawrence, and Haverhill. Woolen mills at Lawrence, Massachusetts, are said to be the largest in the world. At Franklin, New Hampshire, two small rivers join to form the Merrimack. On these streams there are seven dams. There are power plants in Franklin, so it is a factory town, making hosiery and knit goods.

1. Locate some of the factory towns that receive power from the Merrimack River.

Vermont Marble Company

Vermont supplies half the marble used in our country. What are some uses of marble?

The Boston cluster. Eighty or more towns are clustered close around "the Hub," as Boston is sometimes called. These towns, and Boston, make up the Boston Metropolitan District. It has more than two million people, or about one in every four persons who live in New England.

Fishing is Boston's oldest business. The captain of a trawler 100 miles at sea knows that people in Gloucester or in the Boston cluster of cities will buy his fish. They want fish to eat, to quick freeze, to can, to dry, or to salt. Boston and Gloucester are two of our largest fish markets.

Boston is also our largest wool market. Many ships loaded with wool come to Boston from New Zealand, Australia, South Africa, and Argentina.

More than half of the hides and skins used in making our shoes are bought and

American Airlines, Inc.

Boston, leading industrial and distributing center for New England, is important in history. You may want to report any interesting facts from a reference book on this metropolitan district.

sold within a few city blocks in Boston. The Hub is our biggest cotton market outside the Southern States and our biggest rubber market with the exception of Akron, Ohio.

Boston has one of the largest drydocks in the world for repairing ships and one of the largest fish freezing and storage plants. It prints schoolbooks by the millions and is a leader in the making of drugs and soaps.

The Hub city might also be called the "front office of New England." Here is the office of a company that manufactures shoe machinery at Beverly, Massachusetts. Here are the offices of a thousand other businesses that have factories in other parts of the New England States. A company that grows bananas in Central America, the West Indies, and South America has its main office in Boston. The company sells bananas nearly everywhere in the United States and Canada.

"Why," you ask, "has Boston become the business and population center of New England?" One reason is its early start. Boston is probably our oldest port. Boston has been trading with the world since 1630. Another reason for the development of Boston is its fine harbor. The harbor is one of the largest on our coast, deep enough to float ocean ships, and well protected against the waves of the open sea.

1. What is the largest city in New England? Why may it be called a metropolitan district? Give two reasons why this city has become the business center of New England.

Boots and shoes. Boston is the big market for hides, skins, and rubber. The raw materials also come through Boston for about one in every three pairs of shoes

American Airlines, Inc.

One of the Northeast's capital cities is Hartford, the home of many industries. Typewriters, office machines, airplane engines, and automobile radiators are some of this city's products.

we wear and for nearly half our rubber overshoes and boots. Haverhill is one of the greatest centers in the world for women's shoes, Brockton for men's shoes, and Lynn for any and all kinds of fine shoes. When a man who has a shoe store in Pennsylvania or West Virginia or Michigan wants to buy shoes, he need not go to ten factories to see shoes. He goes to offices in Boston and there sees samples from dozens of shoe factories. Companies with factories in a hundred towns have offices in Boston.

Worcester, Massachusetts, on the upland, halfway between Boston and the Connecticut River, is a center for the manufacture of machinery for textile and many other factories.

1. Why do you think Worcester, Massachusetts, has become a center for the manufacture of machinery for textile factories?

2. Why is Chicago a center for making farm machinery?

The South Shore cities. The shore land of Massachusetts, Rhode Island, and Connecticut that extends from the Cape Cod peninsula to New York City has excellent railroads, truck lines, air lines, and busses. Ocean steamers unload coal from Norfolk and Philadelphia at Providence and Fall River. This densely populated area is crowded with towns and cities on the coast or on rivers, a few miles inland. There are so many cities and towns that much of it is in metropolitan districts. These cities make cotton cloth, but especially they make machinery and machine parts for Detroit automobiles. They also make other fine metalwork. In the early days, the fields of the New England farmer were so small and stony that he had little to sell. To make a living, he had to make many things. Having to make things for himself, he also made things to sell. This made the New Englanders skilful workers and started them inventing things. Eli Whitney, of Connecticut, invented the cotton gin.

1. Use a map to locate and name the metropolitan districts along the shore land of Massachusetts, Rhode Island, and Connecticut.
2. Why was it necessary for the early New Englander to make things for himself and for trade?
3. Where does New England get coal?

Cities and factories. Fall River and New Bedford are busy chiefly with the weaving of cotton goods, silks, and rayons. Providence also manufactures textiles and machinery, and is one of the leading centers in the United States where jewelry is made. New London builds submarines for our Navy and has a school where officers for our Coast Guard are trained.

New Haven. Eli Whitney made parts for guns. He took the parts to Washington and called on some United States Army officers. While the officers looked on, Whitney proceeded to fit together the gun parts he had made. The officers were surprised when he made ten guns by fitting the parts together. This was the first time guns had ever been made by use of standardized pieces. Also at New Haven, Charles Goodyear learned how to vulcanize rubber—that is, he made rubber tough, more elastic, and able to withstand heat.

Today New Haven is a great center for the manufacture of guns, rubber goods, and toys.

1. What do you understand by "standardization"? Is there any equipment in your school that was made with standardized pieces?

Bridgeport. Elias Howe made the first sewing machine. Today Bridgeport makes sewing machines by the millions; also typewriters and other office machines, airplane engines, and many other things requiring skilled work in metal. The key for your door probably came from Stamford. This city makes more keys than any other place on earth. Waterbury, the "Brass City," is the leading place for clocks and hundreds of articles in brass and copper. Waterbury, Naugatuck, and Ansonia make almost one continuous town in a valley that is sometimes called "Brass Valley."

Danbury makes hats for millions of Americans. The business began in 1780 in one shop that made three hats a day. Now the city makes hats by the millions of dozens.

1. Why do you think the valley area is sometimes called "Brass Valley"?
2. Learn to write the names of these New England towns. Try to remember each town's most important industry.
3. Use a map to help you make a list of the towns along the Connecticut River. Add the important industry to each town as you read about it in the paragraphs which follow.

The "Long River" towns. The Indians called the Connecticut River the "Long River." Its valley is dotted with towns as you can see by the map. It shows you many towns along this river, towns in Connecticut, Massachusetts, Vermont, and New Hampshire. Towns are strung along the river almost like beads on a string.

Meriden, Connecticut, "the Silver City," has the world's largest factory for making silver plate and china dinnerware. Meriden's neighbor, New Britain, is our hardware capital.

Hartford is as far up the Connecticut as river steamers can go. Here Samuel

Colt made pistols and revolvers—the famous "Six Shooters." The company he founded still manufactures firearms in Hartford. Here also is the largest business in the world for making and selling brushes.

Forty-five insurance companies have their home offices in Hartford—more than in any other American city except New York. There is a special school to train people for insurance company work.

Springfield, Massachusetts, made muskets for Washington's army and is still producing rifles and other firearms. The motorcycles your policemen use may also have come from Springfield. At Holyoke, Massachusetts, the Connecticut River drops about 60 feet. This makes plenty of water power for the many paper mills in the city. You might call Holyoke our "Capital of Fine Writing Paper." Nearby is Chicopee, another manufacturing town by another waterfall.

Brattleboro, Vermont, is close to several water power plants. This small city shows the skill of the New Englander by the variety of its products—furniture, organs, tennis rackets, overalls, paint brushes, pocketbooks. There are many attractions here for vacationists, winter and summer. Similar statements are true of many other towns in Vermont, New Hampshire, and Maine.

St. Johnsbury, Vermont, is best known as "The Maple Sugar Capital" of our country. The farmer's wood lot gives us an industry that we learned from an Indian. In 1830 a St. Johnsbury man said to himself, "How can I weigh a whole wagonload of grain—wagon and all?" So he built the first platform scale. St. Johnsbury still makes scales which are used in many states.

Philip Gendreau

Sugar maples are tapped in early spring.

You can travel from New York City to Burlington by boat. Burlington, the largest Vermont city, has a big trade in lumber. The University of Vermont is at Burlington—also factories that make woolen goods, maple sugar products, and many other articles.

Schools and colleges. People in New England go to school more than do the people of some other groups of states. They have good public schools and many private schools. Each year many hundreds of boys and girls, young men and young women come from other sections of the country to go to dozens of preparatory schools, colleges, and universities in many New England cities. Harvard University at Cambridge, a suburb of Boston, and Yale University, at New Haven, are among the best known universities in the world.

New England in the world of tomorrow. Play, power, and skilful work! These are the three big ideas about New England in the world of tomorrow. Here are the beautiful lakes and mountains, cool summers, snowy winters, and places that everybody wants to visit. In the future, more New Englanders will have more jobs in more summer camps and hotels. They will take care of more tourists all year round, and give people who come for winter sports a good time.

And water power! New England has much unused water power, and it may get power from the St. Lawrence River. These waterfalls can be used to make cheap electricity to run machines in factories or run machines in people's homes. Then some of the homes will be like little factories making things for the big factories in the larger towns. Skilled New England fingers will keep on making fine textiles, hardware, jewelry, clocks, and hundreds of kinds of small machines. New Englanders must do this or move away, because they must keep on buying most of their food, most of their raw materials, and all of their coal and petroleum.

1. How could homes be made into little factories? What two things would make home factories possible?

Something to Do

1. If you live in a factory town, discuss with your teacher and classmates the different kinds of jobs in factories. Is it true that most of the people in your neighborhood get their living from factories?

2. Give the best answers you can to these questions:
   a. In what way did the indented coast line favor fishing and early trading?
   b. Why is fishing in bays less dangerous than deep-sea fishing?
   c. What do the terms "Continental Shelf" and "fishing banks" mean to you?

3. Write a short story of fishing and trading in early New England. Use these words and phrases in your story:
   masts
   hull
   schooner
   clipper
   cargo
   raw materials
   dried cod
   salt herring

4. Choose one of the inventions given in the next column to read about. Report to the class the results of your research.
   a. spinning machine
   b. weaving machine
   c. sewing machine

5. Review the effect the Great Glacier had on the North Central States and compare with its effect on the Northeastern States. Use maps and pictures to help you write your comparison.

6. Make a list of nine industries for which Boston is one of our leading centers.

7. The next time you buy a pair of shoes look carefully at the label on the box to learn if they were made in a New England factory town. Locate the town or city on a map.

8. Write sentences to show the meaning of these words:
   a. textiles
   b. vulcanize
   c. hardware

9. Name the sections of the United States on which New England depends for the raw materials for these industries:
   a. textiles
   b. leather
   c. metal

10. Discuss the following statements with your classmates. Give as many reasons as possible to prove they are correct.
   a. Manufacturing and a dense population are found together.
   b. Manufacturing in New England is due partly to the work of the glacier.
   c. Dense population and the glacier account for the type of farming done in the New England States.

11. If there is a manufacturing plant in your neighborhood, invite someone who helps to run the factory to talk to your class. Prepare a list of questions you would like to have answered about the factory; send the questions to your invited speaker and suggest he use them in his talk.

A Short Quiz

Suppose a storekeeper in the Corn Belt needed the following supplies. Write the name of the New England town to which he could send for each item.

1. clocks
2. hats
3. men's shoes
4. jewelry
5. woolen goods
6. cotton goods
7. rubber gloves
8. typewriters
9. brushes
10. stationery

New York State Dept. of Commerce

New York's skyline from Manhattan Bridge shows hundreds of towering buildings crowded along the island. Offices, factories, hotels, stores, theaters, and restaurants are part of the life of New York.

Chapter 31

Manufacturing and Cities — Middle Atlantic States

The appendix of this textbook contains a lot of geography—geography told in figures, not in words only. Use the figures to check the four big ideas about the Middle Atlantic States.

1. Which is larger, the three Middle Atlantic States together, or the single state of Colorado?
2. Does New York State have as many people as all the Western States?
3. Does medium-sized Pennsylvania have as many people as the three big Pacific Coast States?
4. How many New Jerseys could be placed in Colorado? Does New Jersey have as many people as Colorado?

New York State — a leader. More than three-fourths of the people of the Middle Atlantic States live in big towns or in cities. So many of these people work in mills and factories that New York State is our big leader in manufacturing, Pennsylvania is second, and small-sized New Jersey is sixth.

New York State has more people than any other state and it has the largest city in the Western Hemisphere. A few facts of geography will tell you why this happened. New York is the only state that touches the Great Lakes and also the Atlantic Ocean. New York State has the best way for goods to pass between the Great Lakes and the Atlantic ports.

1. Use your map to trace New York's water route between the Atlantic Ocean and the Great Lakes.
2. What other Middle Atlantic State has an outlet to the ocean and touches the Great Lakes? Is there a good water route through this state?

The Erie Canal. Geography helped New York City win this race for trade. More than a hundred years ago, Governor De Witt Clinton, of New York State, looked at the Hudson River Valley; he looked at the Mohawk Valley, the Mohawk Gap, and the lowlands along Lake Ontario. He said, "This is the only real gap in the eastern highlands! What a place for a canal! We will use State money and build a canal that will join Lake Erie and the Hudson River." So the Erie Canal was built. When it was completed in 1825, the Governor rode in the first boat that passed through the canal. The Governor had a keg of water in the boat from Lake Erie. When the boat reached New York, he poured water from Lake Erie into New York Bay. As he did so he said, "This shows the marriage of the Great Lakes with the Atlantic."

Before there was a canal, goods had to be taken by wagon from Buffalo to New York City, and the cost was $100 a ton in freight charges. But when goods were taken by canal, the freight charge was only $15.00 a ton. Twenty days were required for the journey by wagon, and only eight days by canal. Of course the Erie Canal became popular. The canal boats were pulled by mules night and day, at the rate of 4 miles an hour.

During 1826, the year after the canal opened, 1900 boats and rafts went past West Troy, New York. The boats took grain and other farm products of our country to the oceangoing boats in New York Bay. On the trip westward the canal boats took things to Buffalo. They took clothing, farm tools, and other manufactured goods. At Buffalo the goods were put aboard lake boats and sold to many persons in many places.

1. What products were shipped on the Erie Canal?
2. Give two reasons why the Erie Canal became so popular.

The "Iron Horse." The railroads came next. "We must have some of the big business of carrying goods and people between the Atlantic Coast and the Mississippi Valley," said the railroad men. So tracks were laid near the canal, and the "iron horse," as the locomotive was called, began to run between the Great Lakes and the sea. Railroads carried goods faster than could canal boats.

The Barge Canal and the Superhighway. After many years the people of New York said, "Our canal is losing business to the railroads. We must make the canal deeper and wider, make it big enough to float big barges run by steam engines. And we must extend the canal to Lake Champlain and make another branch to Lake Ontario at Oswego, New York." This was done and the wider and deeper waterway was called the New York State Barge Canal. But the railroads still carry much produce—and at low cost. High rates would drive the business back to the canal.

Then the motor truckmen said, "We, too, must have our share of carrying the goods. But we must have roads with hard surfaces." There are many splendid roads, but New York State now plans to build a "Thruway," a high-speed road for trucks and automobiles, from New York City to Buffalo by way of the Hudson Valley and the Mohawk Gap. Pennsylvania has such a road across ridges and plateau from Harrisburg to Pittsburgh.

The world's "biggest street." The Erie Canal made New York City an ocean gateway for almost all the United States east of the Rocky Mountains. And see how the city grew!

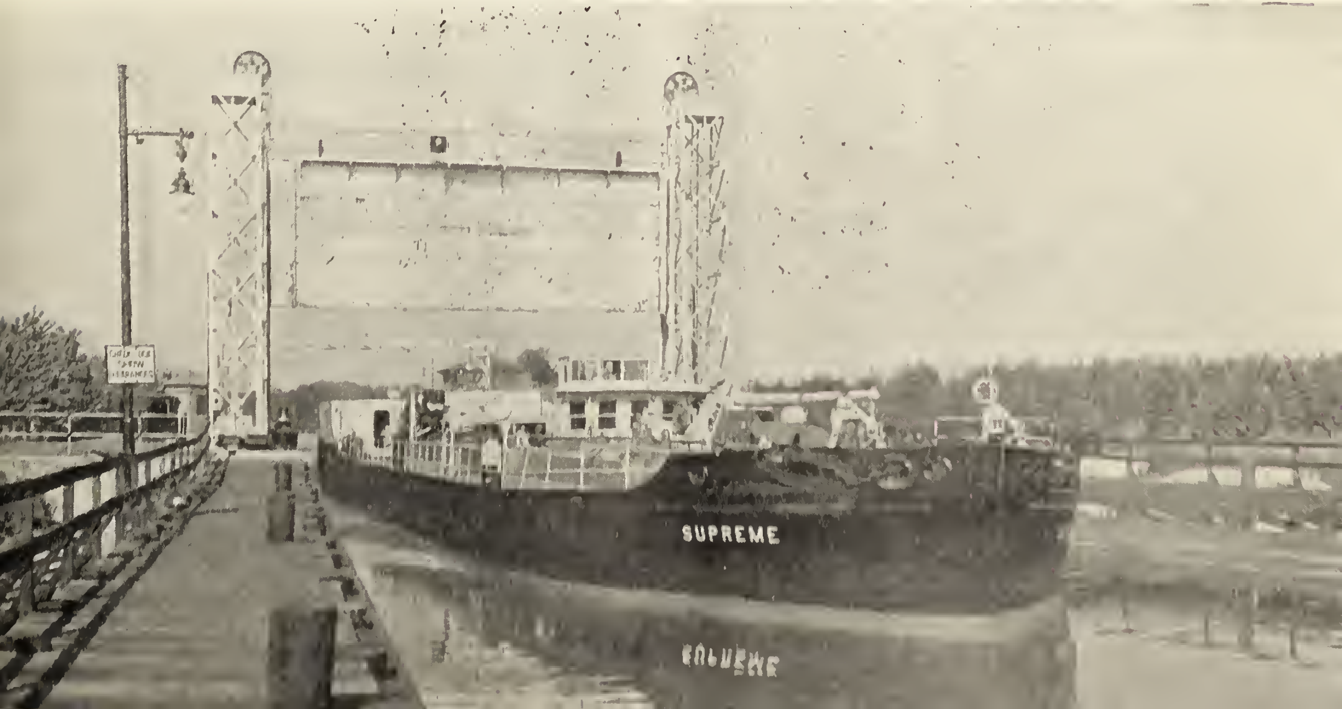
1820—123,706 persons
1830—202,589 persons
1840—312,710 persons
1850—515,547 persons

1. How many persons came to live in New York City between the years 1820 and 1850?
2. What is the latest population figure for New York City?

The Erie Canal has made the Hudson River-Mohawk Canal path the world's "biggest street," with a lane for the canal, a lane for railroads, a splendid auto road, and soon there will be the "Thruway." Cities, big and little, stand on this travel route as big buildings stand along main streets of towns that you have seen. About 85 of every 100 people in New York State live on or near the "big street," where most of the manufacturing and trade for New York State are done. There are many factories, many smokestacks in the towns and cities on the "big street."

Buffalo. Buffalo stands where the world's "biggest street" meets Great Lake boats. Boats from Duluth bring wheat close to tall elevators which store grain. Nearby are mills where wheat is ground into flour. Buffalo rivals Minneapolis to lead the world in making flour.

Buffalo is sometimes called a funnel city because goods of many kinds pour through the city from lake boats and canal boats, railroad cars, and motortrucks. Buffalo is just across the Niagara River from the "Heartland" of Canada. The city handles about one-fourth of all our trade with Canada.



How did the Erie Canal make New York City the ocean gateway for many eastern cities?

New York Dept. of Public Works

At Buffalo, iron ore from Michigan and Minnesota meets low cost electricity from Niagara Falls and coal from Pennsylvania and West Virginia. This is a good place for making steel. Lackawanna, a suburb of Buffalo, has a steel plant much like the one at Gary, Indiana. Iron and steel plants give jobs to thousands of workers. Buffalo also is a leader in making rubber goods, tires, automobiles, chemicals, rayon, and many, many other things.

1. Buffalo is the second largest city in New York State. How many reasons can you give for this fact?

Niagara Falls — a waterfall and a city. Near the western end of the "big street" is Niagara Falls, where the Niagara River, with a roar like deep thunder, drops 93 million gallons of water a minute over a rocky cliff, 167 feet high. It is called one of the wonders of the world because of its beauty and because of its water power.

The city of Niagara Falls stands beside the falls. One of the city's jobs is to have hotels, tourist homes, restaurants, and filling stations ready to take care of crowds of visitors from every state and from almost every foreign country. The visitors have come to see Niagara, one of the mightiest of all waterfalls.

Power plants make electricity from the force of some of the falling water. This makes power equal to a million or more horses all working together. Five times as much electricity could be made, but that would take all the water, and the beauty of Niagara Falls would be gone.

Much of the power from plants at Niagara goes to Buffalo to do a thousand things for the people there. Also much power is used at Niagara Falls and in Canada.

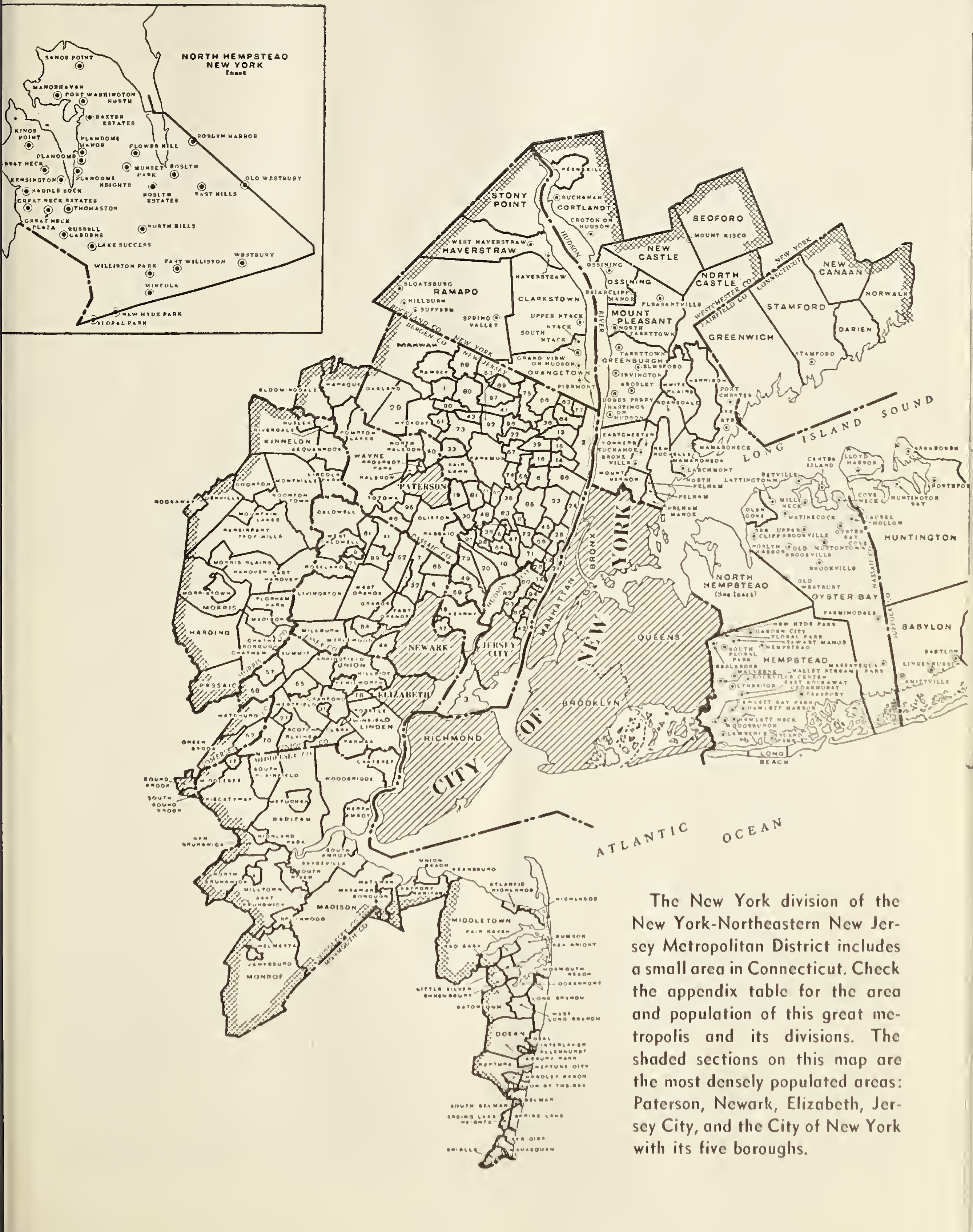
Any factory that must use a great deal of electricity to make its products can buy this power at low cost near Niagara Falls. That is the reason bauxite, the ore that contains aluminum, is brought from Arkansas, and from the Guianas in South America to Niagara Falls where the cheap electricity separates the pure aluminum from the ore.

1. Why is raw material for aluminum brought to Niagara Falls for separation?
2. Why is only a small part of the power of Niagara used?

New York City. The boats on the Barge Canal and the trains and trucks that travel along the "big street" have made Buffalo a great city. See what this transportation has done at the other end of the "big street," at New York harbor, where boats, trains, and trucks bring goods to ships. At New York the goods are put on ships that take them across the ocean or up or down the coast of North America. When the ships return to New York harbor they bring foods, raw materials, and manufactured goods from everywhere. Then they go on another trip, taking other things everywhere.

As you see, this mouth of the Hudson River is a very good place to bring things from the land to the sea, and to bring things from the sea to the land. That is the reason we find here a cluster of cities and towns—dozens of them. More people live within 30 miles of the mouth of the Hudson River than live in any state other than New York State. We will read the story about how this happened.

Nature placed one of the best natural harbors in the world at the mouth of the Hudson River. A harbor, as you know,



The New York division of the New York-Northeastern New Jersey Metropolitan District includes a small area in Connecticut. Check the appendix table for the area and population of this great metropolis and its divisions. The shaded sections on this map are the most densely populated areas: Paterson, Newark, Elizabeth, Jersey City, and the City of New York with its five boroughs.

is a place of shelter for ships, a place where ships can enter easily and lie in quiet water, protected from strong winds and the waves of the open sea. The Queen Elizabeth, one of the largest ships in the world, more than a thousand feet long, gets in and out of New York harbor easily. She can be turned around in the Hudson River. New York harbor, good for ships, is one important reason why New York City has become by far our largest port. Through the New York City doorway pass about one-fourth of the goods and more than half the people who enter or leave the United States.

A big harbor, though safe and deep, cannot by itself make a great seaport. A seaport city must have much productive land back of the harbor. Land is needed to supply the many things the people use. There must be land where farmers grow crops and raise farm animals. There must be land where lumbermen cut trees and where miners take minerals from the earth. There must be space for factories, and power to run the factories that make raw materials into manufactured goods.

New York City began to grow big by "leaps and bounds," as we say, only after the Erie Canal opened the "big street" to Buffalo and then by way of the Great Lakes the route reached the farms, forests, mines, and factories in the rich heart of North America.

When most people say, "New York City," they mean Manhattan Island. This island is the business center of New York and its most crowded part. But Manhattan is only one of five boroughs.

1. Use your map to study the harbor of New York City. How has the harbor helped the city to grow? How has the city's location helped it grow?

2. Use the map to help you name the five boroughs, or parts of New York City. Which borough is not an island or on an island?

Boat, train, truck, and plane. A map will show you flight paths and distances from New York City to certain cities overseas. To handle this air business New York has two great airports and several other smaller ports. One of the airports has 13 miles of runway for planes. As many as 900 planes—seaplanes, land planes, passenger planes, cargo planes, great air liners—can land and take off every day.

Ten of our largest railroads serve New York. They carry more passengers in and out of the city each year than there are people living in North America. About 20,000 ocean steamships enter and leave the harbor each year. And motortrucks and busses come in swarms.

About 175,000 visitors from a distance come to New York City each day. These and the millions who live here make New York City one of the most crowded places on earth. It is said that more people from the New York City boroughs and suburbs go to business each day on Manhattan Island than there are people in Chicago, our second largest city.

Manhattan is a small island—only one to two miles wide and about 13 miles long. How do these millions get into Manhattan each morning and out in the late afternoon?

Subways and skyscrapers. Sergeant York, the Tennessee boy who became a hero of World War I, was the guest of New York City. The Mayor said, "Sergeant, what would you like best of all to do?" Sergeant York replied, "Take a ride in the subway."

A subway is merely an electric railway that is built to run underground.

Frederic Lewis

Many factories, machines, and workers are needed to "dress the nation." Machines cut many layers of cloth for suits of the same size. Is this mass production?

Manhattan has subways four tracks wide—two tracks for express trains, two tracks for local trains. Subways from Manhattan go under the river to Long Island. There they become elevated roads, and their trains run by electricity for miles on bridges above the streets.

Would you like to ride above the housetops in an automobile? New York has a broad auto road high above the crowded streets. On this road automobiles can travel for many miles around the city at a good speed and with traffic lights only here and there. How did little Manhattan Island manage to get space for its millions of workers on so little land?

Years ago the builders said, "We have room for no more buildings. We will build taller buildings." The "Towers of Manhattan," as the group of very tallest buildings is called, is another of the wonders of the world. One building is 102 stories high—tallest yet built by man.

New York City dresses the nation. About twelve million people live in the New York City Metropolitan District. They like to shop in the big city as do the many thousands of visitors from here, there, and almost everywhere.

This fact alone tells you why New York City makes and sells more clothing than any other place on earth. More fur coats and fur pieces are made here than in any other city. About one in every three factory workers in the city makes women's dresses, blouses, coats, and clothing for men and boys.

For every job there is a machine, run by electricity. Most of the work was once done by hand. Electricity on Manhattan Island does as much work each day for every person on the island as 16 workers could do.

Buyers from all parts of our country visit New York each year to see the new styles, and to order clothing that they think the folks at home will like. They sell the clothing in stores in thousands of towns far and near.

1. How many different kinds of workers do you think are needed to take care of the clothing business?

Making many books. New York City is our largest publishing center and also our largest printing center. It makes or sells about seven out of every ten books we read. Much of the printing may be done outside the city. Books are printed in Lancaster and other Pennsylvania towns, and in towns in New England and New Jersey and sold in New York.

Business offices. Nearly every good-sized business in the United States feels that it must have an office in New York City. This office often does the buying for the business and usually takes care of sales. Thus a company with an office on the twentieth floor of a Manhattan skyscraper makes a purchase whereby a carload of lumber is shipped from Washington State to Chicago; another purchase, and a carload of nickel goes from Ontario to Chicago. The head office makes a sale, and machinery is shipped from Chicago or Ohio to California, Cuba, Argentina, or Siberia.

Manhattan Island has some of the largest banks in our country, ready to lend the money that business may need. We say New York City is the business center, the money center, and the travel center of our country.

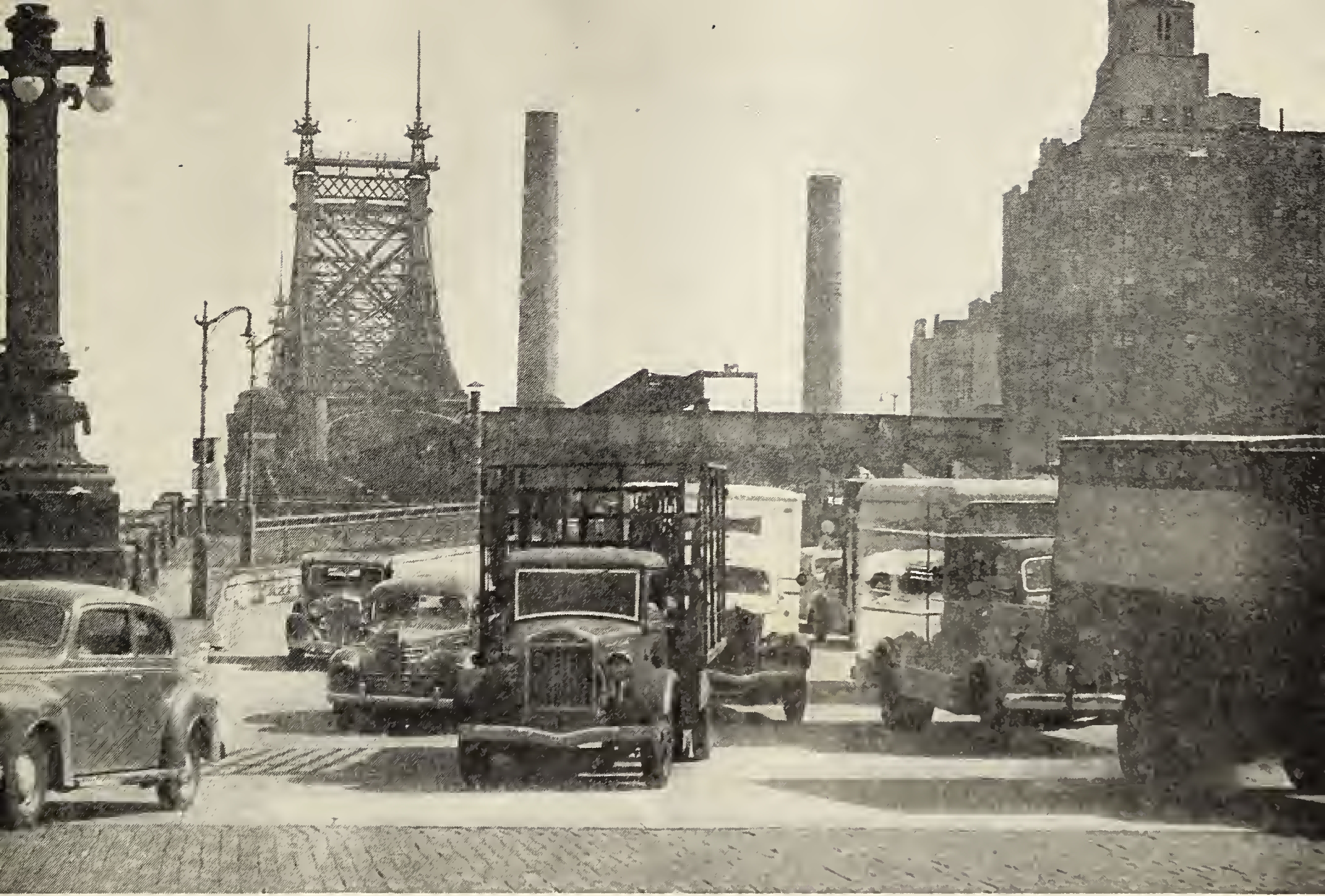
Bay cities. Look across the Hudson to the state of New Jersey and you will see a cluster of towns and cities that seem to be trying to crowd as near as possible to New York Bay. About three of every four persons in New Jersey live in this northeastern corner of the state. This is a part of New York Metropolitan District. The people have jobs at good wages, because they live and also work at the front door of our country, where jobs are made by the Hudson-Mohawk pathway to the Great Lakes and the Mississippi Valley.

1. How does the Hudson-Mohawk pathway make jobs for the many persons in New Jersey? Can you show that we are telling something about New Jersey when we talk about the "big street?"
2. Use a map to locate the cities of Bayonne, Jersey City, and Hoboken. Between what bays and river do they lie?

One city — many city governments. There is a boot of New Jersey land west of the lower Hudson River. Here is Jersey City, with Hoboken to the south of it and many smaller cities to the north of it. Each city has its own government, but the streets run from one town into the next town. You cannot tell where one city ends and another begins.

Bayonne probably makes more gasoline, and other products from petroleum, than any other place in our country.

Jersey City and Hoboken are seaports on the west bank of the Hudson. Here more than nine of the largest railroads run cars onto the docks. Here millions of American men and women boarded transports on their way to battlefields of



Ewing Galloway

Early morning traffic pours off the Queensboro Bridge. Pretend you are a driver of one of these cars or trucks. Tell how you would spend the day either visiting or working in New York.

Europe, Africa, and Asia during World Wars I and II.

Newark is New Jersey's largest city, chiefly because, like the other cities at or near the mouth of the Hudson, it enjoys the benefits of "big street" and New York Bay by way of Newark Bay.

Newark's neighbor, Elizabeth, also has Newark Bay for trade by sea. The city is best known as the home of one of the largest sewing machine factories in the world.

Passaic, north of Newark, is our first city in the making of handkerchiefs. Paterson, by the Great Falls of the Passaic River, does all phases of textile processing, finishing and dyeing, makes much textile machinery, and has many other kinds of manufacturing.

You have now read about the "big street" with the lake port of Buffalo at the western or lake end, and New York, the greatest city in the North American continent, at the eastern, or ocean end. Now you understand why it is that a string of towns and cities has grown up along the Barge Canal and the Hudson River. In the counties touching this waterway live four persons out of five in all of New York State.

1. Explain how the Passaic River helped Paterson get its start in manufacturing.

Rochester. What a place for a city! Here the Genesee River tumbles 205 feet over the same layer of rocks that makes Niagara. Rochester is near Lake Ontario. The lake steamers connect

Rochester with the Canadian heartland and with all cities on the Great Lakes. The city is on the Barge Canal and on the railroad lines that run from Buffalo to Albany. There is a railroad direct from the hard coal fields of eastern Pennsylvania.

In the early days of Rochester the falls of the Genesee turned mill wheels that ground flour. Today the city probably leads the world in making cameras, motion picture film, and lenses.

Perhaps Rochester made the fruit syrup used in your last ice cream soda, the thermometer in your classroom, or the suit some boy in the class is wearing.

Syracuse. Fourth in size among New York cities is Syracuse, near the center of the world's "biggest street." For many years Syracuse was called the "Salt City" because it made table salt from salt beds nearby and deep underground. Now the salt deposits are used to make about half of all the soda ash we produce.

Syracuse is like Buffalo in having factories that make many different products, such as typewriters, farm implements, and dozens of other products. It does not depend on any one industry for jobs for all its people.

Geneva, Auburn, Utica, Rome, Amsterdam, Johnstown, Gloversville are all on or near the Barge Canal. Auburn was a center for making farm machinery before Chicago got started. In Utica many people get their living from knitting mills and factories that make millions of bed sheets.

Rome is the "Copper City." It makes everything in copper from whistling tea kettles to copper cloth.

Amsterdam, the "Carpet City," is one of the leading cities in the world in making rugs and carpets.

The Johnstown-Gloversville neighborhood makes more than half the leather gloves and mittens we wear. Glove makers from Scotland settled here long ago.

Schenectady. One day a salesman said to the great inventor, Thomas A. Edison, "Mr. Edison, there are some vacant land and buildings near the canal at Schenectady—just the place for one of your factories." Edison bought them.

Today that place is covered by a huge factory owned by the world's largest maker of electric light bulbs and other electrical goods. Here is the "House of Magic," a great laboratory where men who know much about science study to find better ways to make electricity work for all of us.

Schenectady is also one of the few places in our country that makes railroad locomotives.

1. Use a map to help you explain why Schenectady is a good place to make railroad locomotives.

Troy and Albany. Troy is now shirt maker for our nation. In Troy, about 1829, Mrs. Hannah Montague got an idea. Said she, "I will make a collar that can be buttoned to a shirt. Then the collar can be taken off and washed and ironed each day. The shirt can be worn for several days." And Mrs. Montague made collars separate from shirts.

But what is more important is that these collars and shirts sold, as we say, "like hot cakes." This started the big collar, cuff, shirt, and underwear business that makes the jobs that now support thousands of people in Troy. The city has the nickname, "Collar City."

Albany, neighbor to Troy, is the capital of New York State and the home of many factories. Troy and Albany stand where the world's "biggest street" bends southward on its way to New York City. Both cities are near the place where the Hudson River connects with the Barge Canal to the west and the Barge Canal that connects with Lake Champlain. They are also on the line of railways and main highways from New York City to Montreal and from Boston to Buffalo and the West.

The Hudson River at Albany is deep enough to float all but the largest ocean liners. This makes Albany a seaport, 124 miles, as sailors measure, from New York harbor.

1. Turn again to a map to find Albany and Troy. Explain why we say they are at the "crossroads." How does this location help them to be factory towns?

Other Hudson River towns. Yonkers is the largest city of the Hudson River Valley, and fifth in size among the cities of New York State. Yonkers has some of the largest carpet factories in our country. Also its workers refine sugar, make elevators, auto trailers, and other products. Poughkeepsie and Kingston are factory towns served by barges, steamers, and railways.

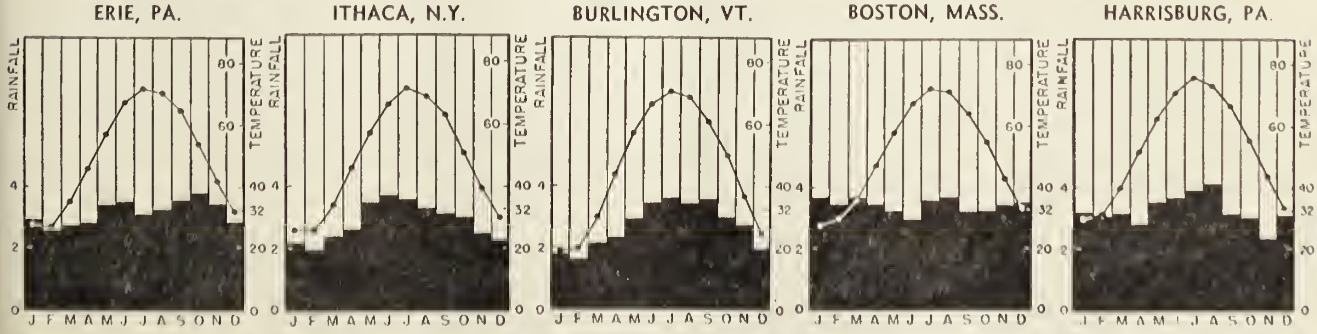
Mt. Vernon is near enough to New York City to be chiefly residential—that is to say, it is a city of homes for people who work nearby or in the city of New York. Mt. Vernon is only one of many residential suburbs of New York.

Cities of the "Southern Tier." Before we leave New York State, let us glance at the larger cities in the "Southern Tier," that is, the row of counties at or near the southern border of New York State and northern Pennsylvania.

Jamestown, in the forest country, is busy chiefly with making furniture. Olean is the center of the oil fields of New York State. But the people are beginning to wonder what they will do when there is no more oil in the wells. Corning, the "Crystal City," makes glassware, including the perfect glass used as mirrors and lenses in telescopes. Some of these blocks of glass are so large that it takes them months to cool when first melted and turned into glass. Elmira helps to protect our homes by making fire engines. The neighborhood of Binghamton and Endicott-Johnson City is now famous for the manufacture of shoes, leather goods, machines for offices, cameras, and film for cameras.

Cities on the Delaware. Five industrial cities stand on the banks of the Delaware River between the Atlantic Ocean and the Fall Line at Trenton. The cities

Do the Northeastern States have "dry spells"? For what crops are these weather conditions favorable? Name the cities where the average temperature is below freezing in January or December. Compare these graphs with those you studied in the Western, Southern, and North Central groups of states.



E. I. Du Pont de Nemours and Company

One of the cities on the Delaware is the home of a chemical company. Among its products is nylon plastic which can be used as wire, coil springs, film, tubing, and window screens.

are Trenton, Philadelphia, Camden, Chester, and Wilmington. Ocean steamers come to all the cities except Trenton.

Trenton. If you shape a piece of clay in any form, then dry and harden the clay by baking it in a very, very hot oven, you have made a piece of pottery. Trenton is a leading center for fine "China" dishes, and for many other kinds of pottery. The city is also a leader in the manufacture of rubber goods and of all kinds of wire—from fine wire to wire heavy enough to hold the great suspension bridges of Manhattan.

1. Use the pictures and a dictionary to help you understand the term "suspension bridge." What other kinds of bridges have you seen?

Philadelphia and its neighbors. King Charles II paid a debt he owed to Admiral Penn by giving the Admiral's son, William Penn, some land in America on the west side of the Delaware River. William Penn wanted to call the land "Sylvania" which means woods, for nearly all of the land was covered with forest at that time. But the King wanted the word Penn to be used in remembrance of his friend, Admiral Penn. So Pennsylvania, Penn's woods, was the name given to the land.

William Penn said that Philadelphia must be located "high, dry, and healthy, where most ships may best ride to load or unload at the bank." Such a place was found on a wedge of land close to the place where a river, later called the Schuylkill, joins the Delaware. This location made Philadelphia a seaport, although it is 100 miles from the sea.

William Penn knew he had received a lot of land that was good for farms, but he did not know that the world's richest beds of hard coal lay in the upper valleys of the Susquehanna, Schuylkill, and Lehigh rivers. Pennsylvania anthracite and a deep, fresh-water harbor leading down to the sea are two of the reasons why Penn's "green country towne," as he called Philadelphia, has become one of the largest cities in our country and one of our largest seaports.

Philadelphia factories can get Pennsylvania coal at a low price. The people buy food that grows on the truck and fruit farms of New Jersey, and the dairy farms and poultry farms to the west of Philadelphia. Raw materials come to Philadelphia by railroads from the interior of our country. Also, raw materials come to the river cities from many parts of the world by ships through the Delaware ports and New York.

To these ports come hides and skins to be made into shoes and other articles; wool, cotton, and fur for carpets, rugs, dress goods, and hats; iron and steel for the shipyards on both sides of the Delaware; and sugar and petroleum for the Philadelphia refineries.

Camden is joined to Philadelphia by the Delaware River Bridge. Camden is busy supplying our country with radios, phonographs, canned soup, warships, merchant ships. Perhaps the pen you use was made in Camden.

Chester, oldest town in Pennsylvania, is part of the Philadelphia port. It has shipyards and textile mills. Chester assembles automobiles and is one of our largest makers of railroad locomotives.

1. Explain how Philadelphia, located 100 miles from the ocean, can be a seaport.

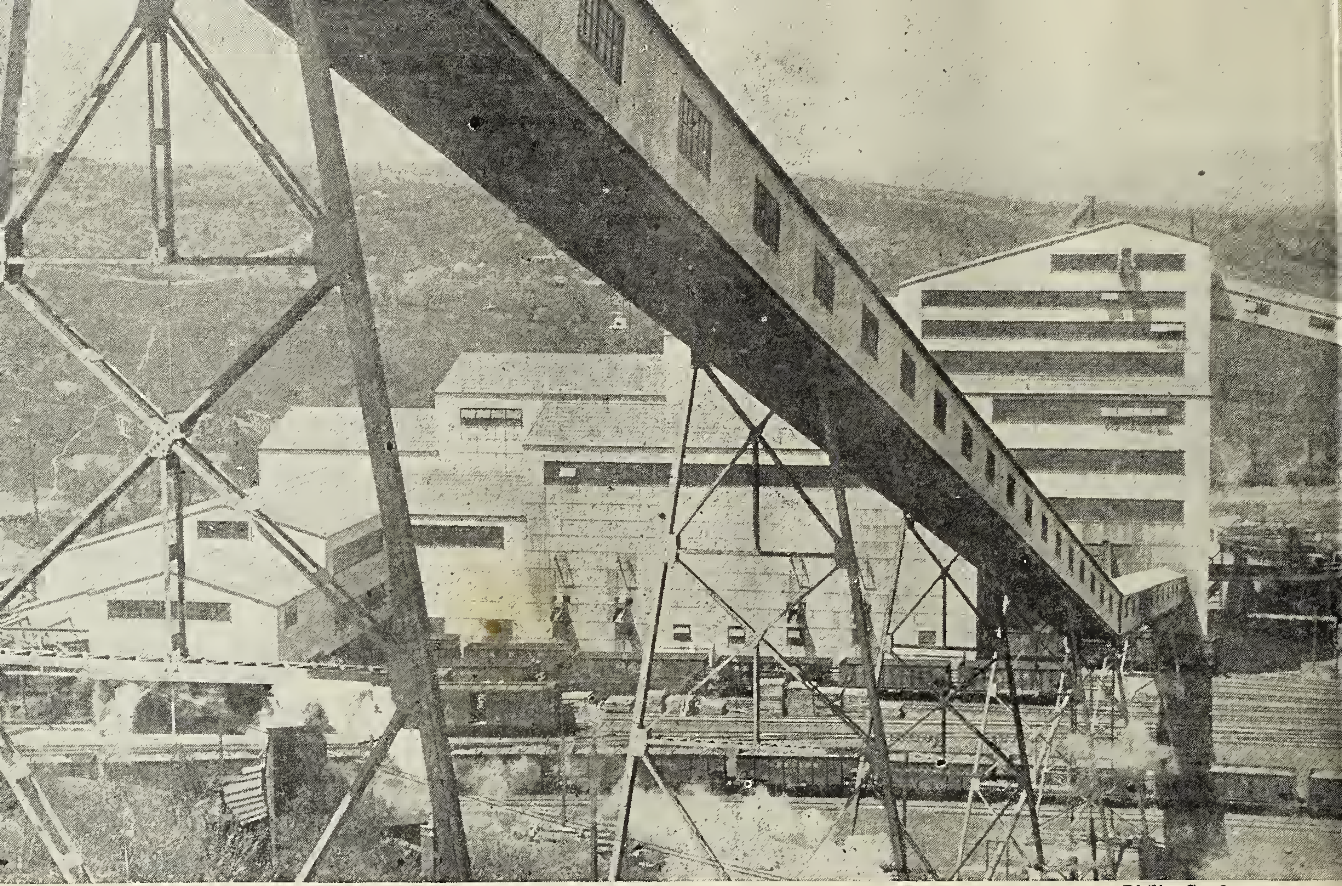
2. You read about Wilmington, the fifth industrial city on the Delaware River, in the Southern States. Read again the paragraph on Wilmington and tell why you think it has grown to be a city.

Cities of the Great Appalachian Valley. You read about the Great Appalachian Valley with its good farm lands and its string of manufacturing towns. This valley, with its chain of towns, extends from Maryland into Pennsylvania and New Jersey. As we go north, the towns are Chambersburg, Carlisle, Harrisburg, Lebanon, Reading, Allentown, Bethlehem, and Easton in Pennsylvania, and Phillipsburg in New Jersey.

Location and resources have been the chief advantages in building factory towns in this valley, just as in New England and elsewhere in Pennsylvania.

A huge crane dumps rock into a truck in this Pennsylvania stone quarry. Such giant machines save hand labor and give us cheap material for roads, cement, and limestone.

Caterpillar Tractor Company



Philip Gendreau

This huge building is an anthracite coal breaker. In it anthracite coal is broken into different sizes, and the pieces of rock are removed. This is one of the reasons why anthracite is more costly than bituminous.

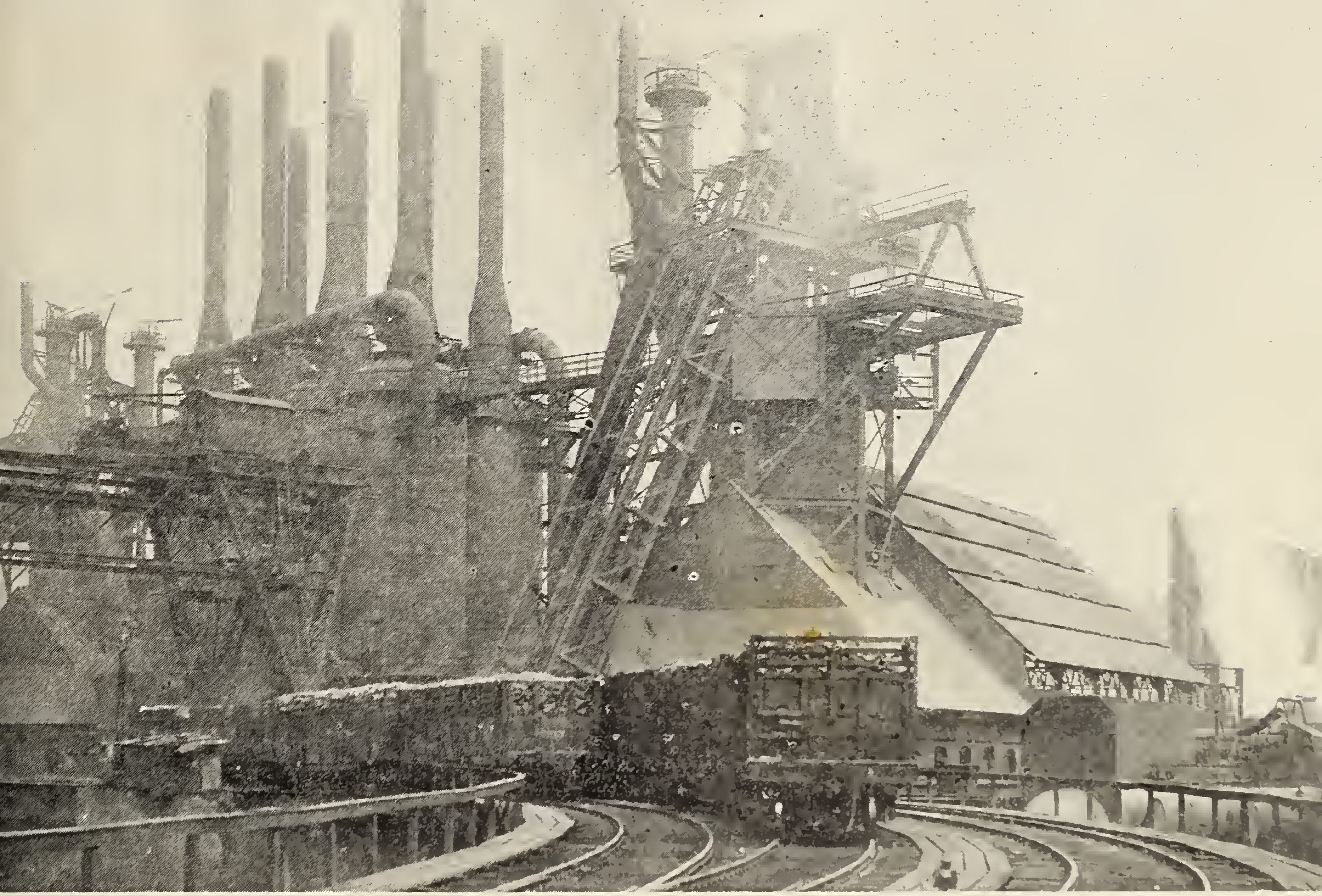
1. What advantages do the cities in the Appalachian Valley have as factory towns?

Lehigh Valley cities. Allentown, Bethlehem, and Easton grew, chiefly, because they lie in the part of the Great Valley that is drained by the Lehigh River. The Lehigh River flows into the Great Valley from the north. The Lehigh Valley opens a route making it easy for the railroads to carry anthracite coal for the furnaces in this part of the Great Valley. Nature placed billions of tons of limestone and shale near Allentown and Easton. These are the materials needed for making cement. This rock is quarried, crushed to powder, burned in long furnaces, and sold as Portland Cement. Mixed with water, sand, and gravel, the soft powder hardens into stone, called concrete.

The Lehigh Valley is about 100 miles from the great markets of New York and of Philadelphia. This causes Allentown to be our greatest cement-making center. Also there are silk mills and mills for making iron and steel.

Bethlehem is one of the largest centers for making iron and steel goods. Also it has silk and stocking mills. Easton is near some of the best slate quarries in the world.

Other Valley cities. Reading is close to coal mines. It stands at the place where the Schuylkill River opens a gap in the eastern mountain wall of the Great Valley. The city is fifth in size among Pennsylvania cities and was making iron as early as 1748. Today "made in Reading, Pennsylvania" is a label on



Carnegie Steel Company

Steel is a big industry in the Northeastern States. Pittsburgh, Pennsylvania, is the home of a large steel company. What factors determine the location of steel mills? Why do we call steel a heavy industry?

over 700 different kinds of goods. We mention only stockings, hats, window shades, lace, and underwear.

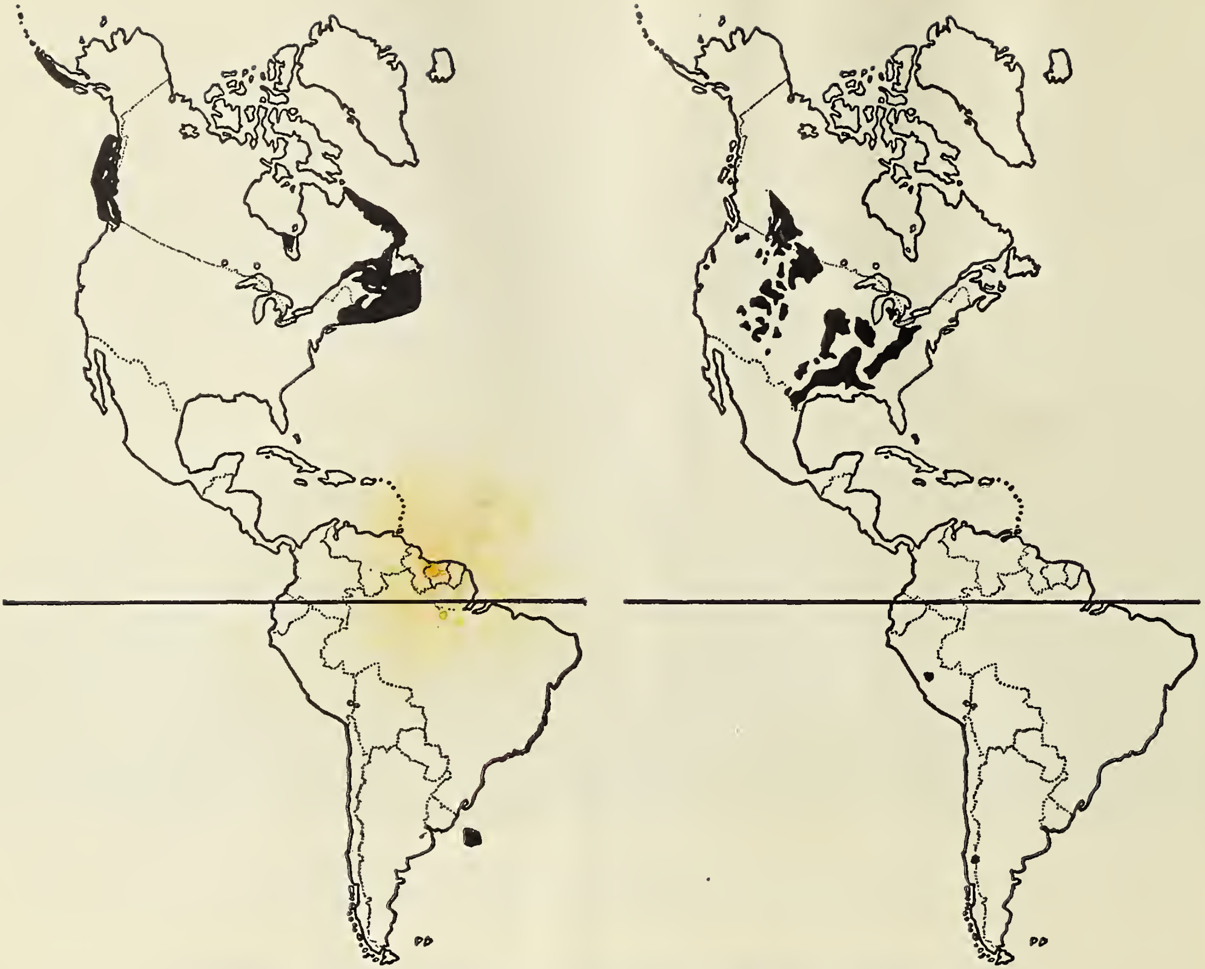
Lebanon has many machine shops and one of the largest chicken raising enterprises in the world. Harrisburg, like Reading, stands at a place where a river, the Susquehanna, opens a route from the plateau into the Great Valley.

Lancaster and York stand in the center of a rich valley that is much like the Great Valley. These cities have machine shops and also are known as centers of some of the best farming land in the United States. They have factories that make cigars from tobacco grown in the neighborhood. The linoleum on your floor and your father's watch may have been made at Lancaster.

1. What raw materials for factories can be supplied by areas surrounding Great Valley cities?

Anthracite towns. The Scranton and Wilkes-Barre Metropolitan District has more than six hundred thousand people and nearly all are there because of coal. Nanticoke, Plymouth, Pittston, and Carbondale are some of the other towns in this metropolitan district, which includes the northern anthracite field. A few miles to the south is the southern anthracite field with its string of towns—Shamokin, Mt. Carmel, Shenandoah, Tamaqua, and Pottsville.

The big job in all these places is the mining and shipping of millions of tons of anthracite coal. Many railroads are needed to haul the coal and other goods



Fishing for cod is work for two main areas. Notice the distribution of coal.

the cities produce. Many people in this mining region, especially the women and girls, work in factories. "And what do they manufacture?" you ask. Strangely enough, the answer is—laces, silks, and men's shirts.

1. Where are Pennsylvania's anthracite fields? To help you with your answer, use a map to locate the "anthracite towns."

The Altoona-Johnstown neighborhood. Here coal is mined that makes very good coke. So Johnstown has one iron and steel mill alone that gives jobs, in good times, to twenty thousand or more workers. And Altoona has such big railroad shops that it is called "the Home of the Iron Horse."

1. Why do you think Altoona has big railroad shops?

The Pittsburgh cluster of cities. If you go north from Pittsburgh, you will find bituminous, or soft coal. You also will find coal mines, villages, and towns where coal miners and their families live. You will find more bituminous mines and towns of the workers if you go south, or east, or west from Pittsburgh.

This land is in the Appalachian Plateau. The rivers have cut deep valleys in the plateau. The railroads must follow the rivers, and along the railroads in the narrow valleys are many steel works and other factories, and there, also, are the towns where the workers live.

The people who live within 30 miles of the center of Pittsburgh make about one-fifth of our iron, one-fourth of our steel, and one-fifth of our glass.

Why is Pittsburgh so busy with these things? Two rivers meet at Pittsburgh to form a third river. Boats on the Monongahela alone, carrying coal from mines to steel plants, probably carry more coal than is carried on any other river in the world. Iron ore from Minnesota and Michigan comes down the Great Lakes to Cleveland or Erie and then by a short railroad trip to Pittsburgh.

Beds of pure white sand are found near the city. Natural gas comes in pipes, chiefly from West Virginia, to supply cheap fuel to melt the sand for making glass.

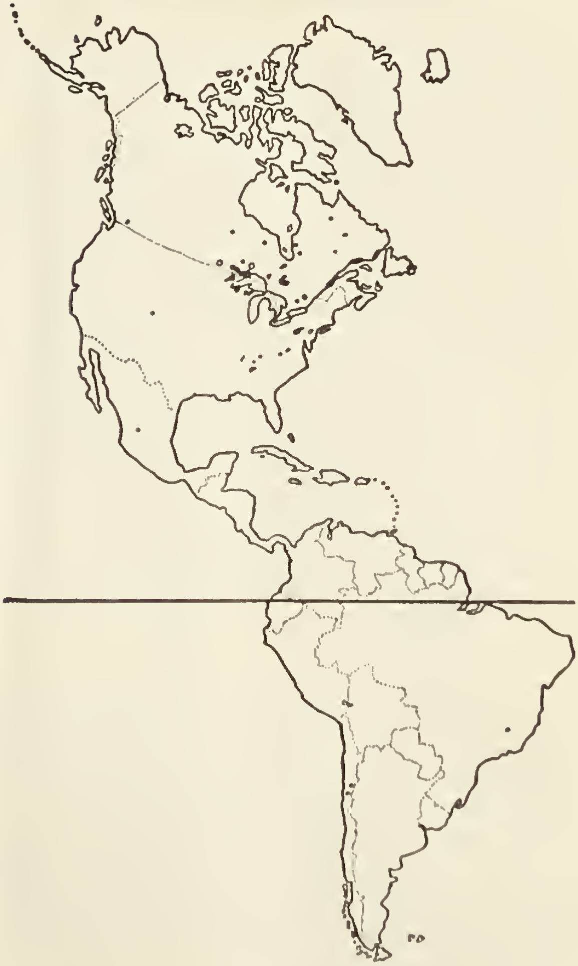
Now you have four reasons why the cities around Pittsburgh are so busy with manufacturing. There is a fifth reason—the Ohio River. Boats on this river and railroad trains on the flat lands beside the river help Pittsburgh to sell what it makes to the buyers in all parts of the North Central States and the Mississippi Valley.

Erie is another of these "funnel cities" about which you have learned. Grain, iron ore, coal, oil, and many other products pour through Erie. Erie also has 300 factories. The factories make many kinds of goods of which we list but four — steam shovels, locomotives, refrigerators, and paper.

1. What rivers meet at Pittsburgh?
2. Trace the route of iron ore from Michigan to Pittsburgh.
3. Explain "funnel cities."

The Great Lakes-St. Lawrence Waterway. The St. Lawrence River and Great Lakes form a second water road from the Atlantic Ocean to the heart of North America. But the St. Lawrence has many rapids as it tumbles down to sea level at Montreal. Shooting these rapids in boats is fun, but no boats can go up the rapids. The Canadians have built canals around the rapids, but they are only 14 feet deep. There is a plan to build a series of dams that would make enormous electric power by sending the whole river through waterwheels and, also, let large steamers go to Chicago and Duluth.

Deposits of iron ore furnish raw material for steel mills. Name important uses of steel.



Thus far it is only talk, but it needs only work to put the plan into operation.

Perhaps in the world of tomorrow, New England, New York, and Canada will have so many factories that they will need to use all the power the dams on the St. Lawrence can produce. Maybe these factories will be making aluminum, paper, fertilizer, rayon, and hundreds of other useful goods out of such common things as coal, oil, air, water, salt, and wood. Remember the magic words—chemistry, synthetics, plastics.

1. Compare the proposed St. Lawrence Waterway with the New York Waterway. What purposes will the St. Lawrence serve?

Something to Do

1. Name three methods of transporting goods between the Atlantic Coast and the Mississippi Valley. Discuss the advantages and disadvantages of each method.

2. Draw an outline map of New York State. Use your book to help you draw in the Barge Canal. Now locate the cities along the "big street" with a small circle like this: ○. Close the book and write the names of the cities with their locations on your map. Check with your book when you have finished.

3. We say that New York City has one of the best natural harbors in the world. What do you understand by the terms "natural" and "man-made" harbors?

4. Write a sentence to show you understand the meanings of these terms:

subway
elevated
express trains
local trains

skyscrapers
lenses
soda
locomotives

5. Learn to write the names of the towns along the Barge Canal and Hudson River. With each write the name of the industry or product that makes the town important.

6. Is your home or school near a crossroads? What streets or routes meet to form your crossroads? What does the term intersection mean? You will want to use the term in explaining "crossroads."

7. Choose one of the Middle Atlantic cities to report on to the class. Your teacher may help you to work out a quiz program on the cities of the Middle Atlantic States.

8. Name the ways in which concrete is used in your school; name other uses of concrete.

9. Why are silk and stocking mills often located in mining and steel towns? Give examples of cities where this is true.

10. Make a list of the manufactured products of the Great Valley towns in Pennsylvania.

A Short Quiz

Here is a list of some cities of the Northeastern States and an identification for each. Copy the name of each city, choose the product or term which identifies it, and write it with the city's name.

1. Utica
2. Niagara Falls
3. Buffalo
4. Paterson
5. Bayonne
6. Syracuse
7. Gloversville
8. Schenectady
9. Troy
10. Albany
11. Trenton
12. Philadelphia
13. Camden
14. Chester
15. Harrisburg

a. electrical goods
b. New York's capital
c. Pennsylvania's seaport
d. bed sheets
e. "funnel city"
f. gloves
g. "collar city"
h. pottery
i. Pennsylvania's capital
j. locomotives
k. hydroelectricity
l. silk and rayon
m. petroleum products
n. radios
o. "salt city"

Stories You Will Enjoy

Silver Run by William Heyliger—Appleton-Century
Raider's Hoard by M. P. Allen—Longmans
Covered Bridge by Cornelia Lynde Meigs—Macmillan
Saturdays by Elizabeth Enright—Rinehart
Henner's Lydia by Marguerite DeAngeli—Doubleday.
Two on a Tow by Zillah K. Macdonald—Houghton
Camp at Westlands by Marjorie H. Allee—Houghton
Thief Island by Elizabeth Jane Coatsworth—Macmillan
Here's Juggins by Amy W. Stone—Lothrop

Cod, Iron, and Coal

The distribution map on fish shows areas along northern coasts where catching, processing, and marketing fish and fish products provide work and food for many people. Some of our neighbors in the North, especially those in New England and Canada, depend entirely upon the fishing industry for their living.

The first panel in this series tells the story of cod, one of the kinds of fish that live in New England waters. Huge nets trap the cod and hoist them to the ship's deck. Workers prepare the fish for market by washing them and removing the parts we do not eat. Some of the cod are frozen before they are sent on to market. In what other ways are fish prepared for market?

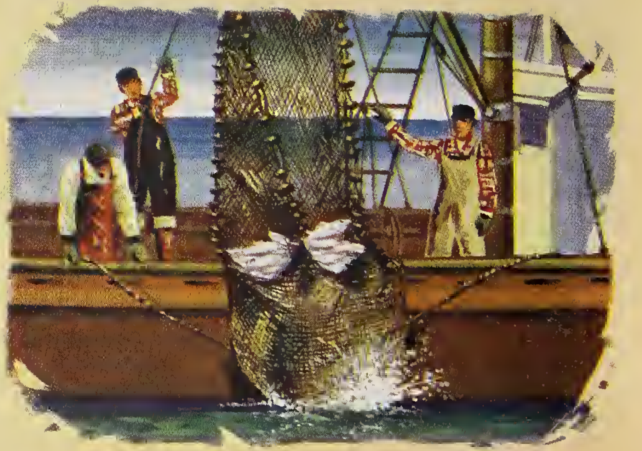
A large part of the Western Hemisphere's iron ore is found in the United States. Giant shovels scoop ore from the mine and load it on railroad cars. Look carefully at the picture showing an ore steamer being loaded through chutes from bins on the ore dock. Steamers and trains transport the iron ore to steel plants. Here blast furnaces and open hearths change the ore into molten steel which is poured into ingot molds. Other pictures in the panel show the sheet steel in a rolling mill and a worker joining sheets of steel on the hull of a ship.

You have seen picture stories of 16 products which are important to neighbors in the Northlands and in the United States. Can you tell some of the steps or processes between raw material and finished product in each of the 16 industries?

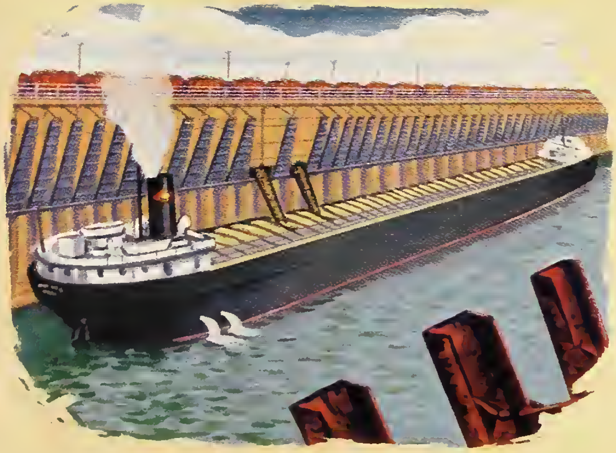
Use the products pictured with the section of the country in which you live to prepare a word picture of production. Include in your discussion the number of workers required, methods of sales to consumers, transportation methods, and any other interesting facts.

Next in this group of production panels is the story of coal. Miners drill for coal in tunnels deep underground. A train of electric cars brings the coal to the surface where workers sort, grade, and load it into cars. Trucks deliver the coal to homes where it provides warmth and comfort for families. What other uses of coal can you name?

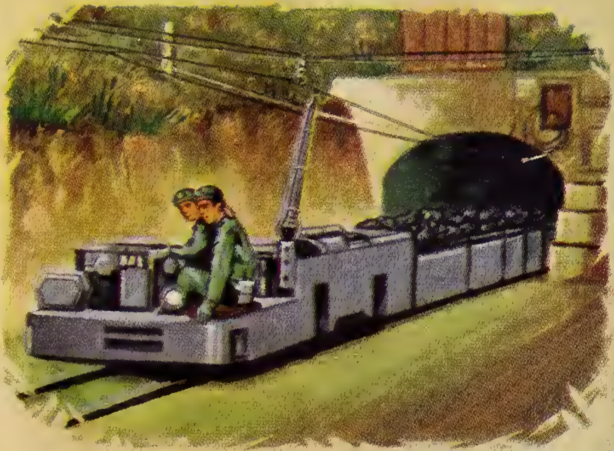
Cod

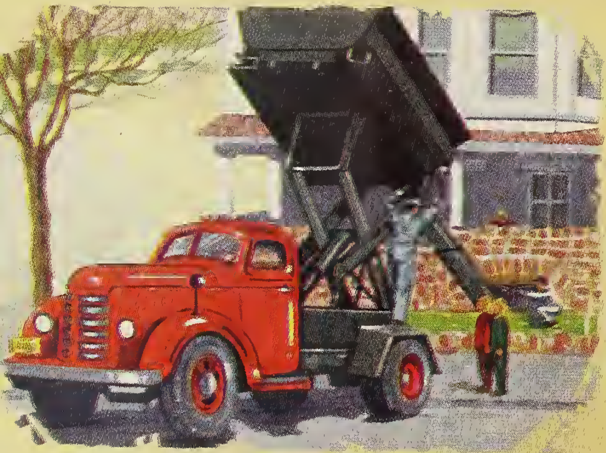


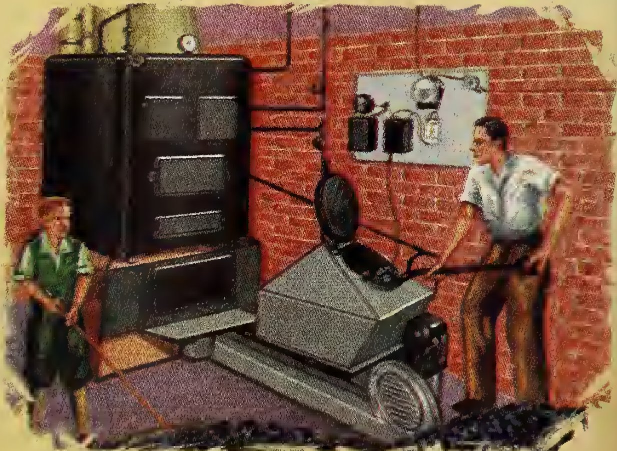
Iron



Coal







(©) Screen Traveler from Gendreau

Martinique, a French colony in the West Indies, has many volcanic mountains. This picture shows Fort-de-France, the capital city. More than 200,000 persons live on this island.

Unit IV—Mexico, Central America, and The West Indies

Chapter 32

Middle America

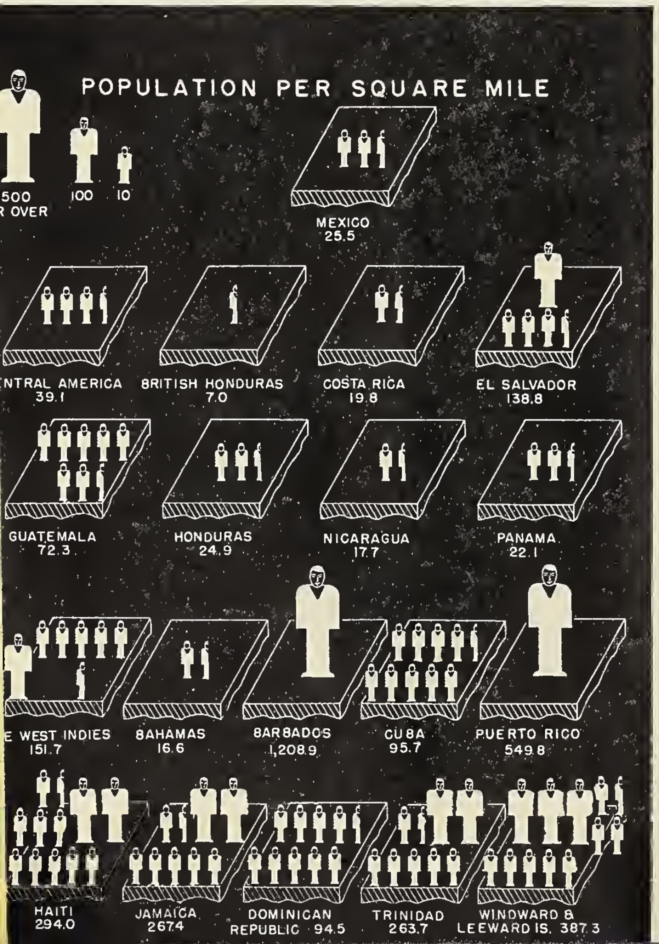
What is Middle America? It is the name that is given to the countries and the islands that lie between the United States and South America. They are Mexico, Central America, and the West Indies. In these countries and islands of Middle America we find a great variety of land surface, a great variety of climate, a great variety of people, and a great variety of government.

The land surface of Middle America has lowlands, highlands, and plateaus. In northern Mexico are parts of the same lowlands, highlands, and deserts that we find across the border in the United States. The main western highlands of the United States extend the whole length of Mexico and almost all the way across Central America. Many of the West Indian islands have mountain peaks rising steeply from the sea. But the eastern parts of Mexico and Central America are mostly lowlands.

You are wondering, no doubt, where people find comfortable places in which to live in these countries. Most of the city people live on the plateaus, high above the hot, wet lowlands. Plateau weather is cool, even though much of the land lies in the Torrid Zone.

People from Spain settled in Mexico and Central America soon after Columbus made his voyages to the New World. At that time there were more Indians in this part of North America than there were in the United States. There are still many Indians in Mexico and Central America, and some of them speak their own languages. Some of the West Indies were settled by Spanish people, some by English, some by French, and some by Dutch. All these languages are spoken in some parts of the islands. The early settlers brought Negroes from Africa. We, therefore, find a great variety of peoples in Middle America.

Use geographic facts in discussing this graph.



These many kinds of people live under many different governments. In Canada and the United States we have large areas ruled by one government, but Middle America has ten independent countries and many colonies belonging to the United States and to countries in Europe. Middle America is indeed a land of variety.

Something to Do

1. Use a large map or globe to help you answer these questions on Middle America.
   a. Locate Mexico and Central America by giving their latitudes and longitudes.
   b. The West Indies are divided into two main groups, the Greater Antilles and the Lesser Antilles. What island is the largest in the Greater Antilles group? What two countries make up the island of Hispaniola? Name an island in the Lesser Antilles that belongs to France; to England; to the United States.
   c. Write the names of the six republics and the one colony in Central America.
   d. Name the four large water bodies that surround Middle America.
   e. In what direction is Mexico City from Brownsville, Texas? How far apart are these cities?
   f. Trace the physical features of Middle America by locating the mountains and highlands, the lowlands, and the many islands.

2. The next three chapters will tell you more about each of the three main parts of Middle America. First you will study Mexico. What do you know about this southern neighbor country of the United States? Make a list of the things you know about the land, the climate, and the people in Mexico.

Would you like to learn about Mexico? Make a list of the things you want to learn and check the items as you study the next chapter.

Ewing Galloway

People of Mexico like to go to market to sell or trade goods they may have. The picture shows the market place of this village. Notice snow-covered Ixtaccihuatl in the background.

Chapter 33

Mexico — Next Door Neighbor

Miss Brown and the pupils have been very busy for two weeks. They began working hard when some new books on Mexico appeared in the school library. Their bright-colored jackets and interesting pictures made the boys and girls want to read the books.

Tom had an idea. "Why not let us choose teams, Miss Brown? Each team can read one of the books and make a report about something in Mexico."

"All right," agreed Miss Brown, "and I will give a report, too, on my trip to Mexico City."

"Good," cried the children. The class made a list of the things they wanted to know about Mexico. Each group chose a topic from the list. Then the groups went to work on their reports, reading the new books about Mexico.

The Mexican people. Jane and her group took "The Mexican People" for their topic. Here is their story. "When you cross the river, the Rio Grande, into Mexico, you may not understand the people when they talk to you, for they are speaking Spanish. People from England first settled the United States;

Use the statistical tables to compare the areas of Mexico and the United States.

we speak English. But people from Spain settled Mexico. The Spaniards settled in Mexico nearly 100 years before the English people came to Massachusetts. The cities of Mexico look like cities in Spain with their large churches and tall, white buildings.

"When the Spaniards came to Mexico they found many Indians living there. In the United States most of the Indians got part of their living by hunting and part of it by growing patches of corn in clearings in the woods. In Mexico, most of the Indians were farmers. They lived in villages with houses of stone or sun-dried brick. The Indians of Mexico had cities with temples; they had a palace for their king. Some of the rooms in the palace were lined with gold, and there were furniture and jewelry of beautiful workmanship. To this day there are more Indians than Spaniards in Mexico. Not so long ago a census was taken. The count showed 2½ million persons of European races, 6 million Indians, and 13 million persons who were part Indian and part white. Long ago many of the Spanish settlers married Indian women. Their children were part Indian and part European and were called Mestizos.

"Mexico is a very mountainous country. This makes it difficult to travel there. In some places, far back in the mountains, there are Indian villages where white men may not be seen more than once or twice a year. In southern Mexico there are towns of 5,000 people where not a single white person makes his home, and other towns have a hundred Indians for every white person who lives there.

"Many different Indian languages are spoken in Mexico. Sometimes the Indians of one tribe cannot talk with the Indians who live over the mountain in the next valley because they speak different languages. But some Indians speak Spanish and go to school and live as Europeans live. Several Indians have been presidents of Mexico.

"Nearly all the Indians of Mexico are farmers today as they were four hundred years ago when the Europeans first found them. The farm of the Mexican Indian does not often have horses and reapers, tractors and trucks. If he is rich, the farmer may have a donkey, some chickens, and a couple of goats that give a little milk for a part of the year. When this farmer is ready to plant his patch of corn, he may dig up the field with a hoe or he may borrow his neighbor's donkey and hitch two donkeys to a wooden plow.

"The European people of Mexico live and work much as we do in the United States."

1. Name the three kinds of people in Mexico. In what different ways do they make a living?

A pattern for Mexico. John's group chose for its topic, "Mexico, the Land." John read the report very slowly, and the class found the places on the map.

"Mexico is shaped like a large horn that opens toward the United States.

The peninsula of Lower California is the handle of the horn. The horn twists around at the small end to make the peninsula of Yucatan.

"Lower California is long, narrow, and has mostly mountains and desert. It pushes 800 miles down the Pacific to the Tropic of Cancer and beyond. Hot, dry, and lonely, the peninsula of Lower California is one of the wildest and least known parts of North America. It is about the size of Illinois, but it has only one person to the square mile.

"Yucatan, about the size of Georgia, is a strange land of thick jungles in the south, flat open plains in the north, and rivers that run underground through passages in the soft limestone rock."

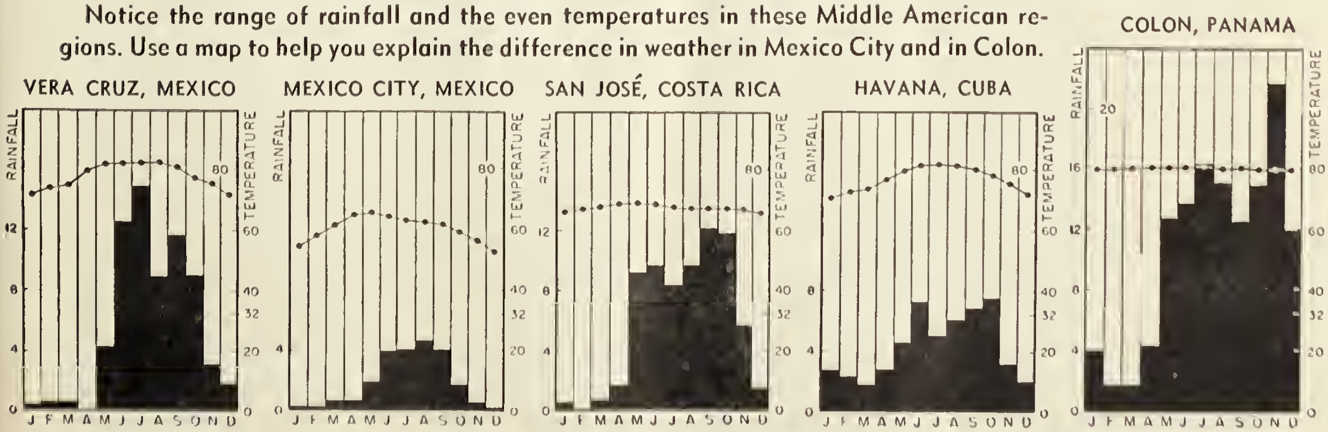
1. Use a map to locate the peninsula of Lower California; Yucatan.
2. Review your definition of the term "peninsula."
3. Give an interesting fact about Lower California and about Yucatan.
4. What is the dotted line that crosses the southern end of Lower California?

The coastal plains. "Mexico is often called 'Three Step Land.' The lowest step is coastal plain. One piece of this plain stretches along the Gulf of Mexico from the Rio Grande to Yucatan and beyond. The second piece of coastal plain begins at the head of the Gulf of California. It narrows as it faces the open Pacific Ocean. Here and there the highlands come to the shore of the sea, but there is some low plain most of the way to the boundary of Guatemala, Mexico's neighbor in Central America. Tierra Caliente is the name the Mexicans give to the part of this low plain that lies south of the Tropic of Cancer. The name means 'the hot country.' This is the land of tropical products."

The mountain slopes. "As we go up the mountains, the weather gets cooler. Somewhere between 2,100 and 3,000 feet above the sea we reach the land which the Mexicans call the 'Tierra Templada,' 'the mild country,' or 'the zone of coffee.' The mountain slopes and mountain valleys here are much cooler and more pleasant than the hot lowlands. The weather is much the same in all the months in Tierra Templada."

The plateaus. "The third step of Mexico is the mountains and plateaus that are more than 6,000 feet above the sea. This is the Tierra Fria, 'the cold country,' the 'zone of grains.'

"The map shows that most of Mexico is a high plateau with mountains east and mountains west. Mountains to the


Notice the range of rainfall and the even temperatures in these Middle American regions. Use a map to help you explain the difference in weather in Mexico City and in Colon.

west are called the Sierra Madre Occidental, Spanish for Western Mountains, and those to the east are named Sierra Madre Oriental, Eastern Mountains. These mountains are in the Tierra Fria and so is most of the high plateau between them. The eastern and western mountains come together south of Mexico City and continue into Guatemala. These mountain systems have many ranges, many branches, many peaks. Mexico is a mountainous country.

"Highest and most beautiful mountain in Mexico is Mt. Orizaba. Its peak rises 18,000 feet or more directly from the coastal plain west of Vera Cruz. Orizaba is the highest mountain in North America south of Alaska.

"On the southern rim of the cup-like valley that holds Mexico City is another more than three mile-high volcano. It is Mt. Ixtaccihuatl. The name means 'The White Woman.' As you look up to this mountain, its top looks like a princess asleep on her couch. Her face is to the sky, and a blanket of snow covers her.

"The plateau between the eastern and western mountains is nearly a mile and a half high in the southern part near Mexico City. Farther north, near the United States boundary, it is about half a mile above sea level.

"Think of the Mexican plateau as being fairly level land crossed here and there by mountains. Sometimes, as at Mexico City, the mountains form a circle around a part of the plateau. Mexico City is in a kind of basin with high mountains all around it.

"The Mexican plateau has no winter as we know winter. There is a dry season from November to April. Instead of summer, there is a rainy season from May to October.

"In July, August, and September, the months of heaviest rainfall, showers come often but only for an hour or two. The rest of the day is bright and clear. Mornings on the plateau are like crisp autumn with us. Midday is like mild summer weather. The evenings are filled with the softness of spring, but if you go out at night you will need your overcoat. The plateau is such a cool and healthful place that it is crowded with people. They locate wherever they can find a way to make a living. Thirteen out of every twenty Mexicans live on the plateau."

1. Compare the weather in Mexico with the weather in your part of the United States.
2. Explain why there is heavy rainfall on the eastern slope and so little rainfall in the interior.
3. Turn to a physical map of Mexico and discuss the meaning of the different colors on the map.

Living on the coastal plain. Mary's group chose for its topic, "Living on the Coastal Plain." "Our story is very different from the others," said Mary as she began to tell what her group had learned.

"The Mexican shore of the Gulf of Mexico is rather dry at both ends but wet and swampy in the middle. This middle part is steaming hot almost all the time. Moist winds, called 'Trades,' sweep in from the Gulf most of the year. As the winds climb the eastern mountain, the air becomes a little cooler. Clouds form and rain pours down, as much as 120 inches a year near the Isthmus of Tehuantepec. Mosquitoes buzz and bite. Gnats and other insects are very disagreeable. The plain is not the most pleasant or healthful place for people.

Hu Watson from Gendreau

Henequen is a hot, dry climate plant. In harvesting, the lower leaves are cut and then cleaned by scraping. The fibers are dried in the sun before they are graded and baled for market.

"People from cooler lands do not like such weather, but some kinds of plants like this climate. It is perfect for the vanilla bean vine, sugar cane, and bananas. The thick, tangled forests produce logwood and other valuable woods and chicle for chewing gum. All of these things are produced in this hot, wet part of the Tierra Caliente."

Mary was quite excited as she told about oil. "Men found oil in the rocks beneath the coastal plain in 1901. For many years Mexico stood second only to the United States in producing that good 'liquid gold' we know as petroleum. One well near Tampico actually spouted 261,000 barrels of oil in one day—24 hours. That well has stopped and so have many others; and Mexico now does not stand so high among the countries of the world in production of petroleum. Oil fields have the bad habit of ceasing to be oil fields.

"Tampico is Mexico's largest oil center and one of the busiest ports on the Gulf. If you walked along the streets of Tampico, you would hear some people talking English. Most of these people would be Americans. Most of the oil wells in the world have been made by American drillers. Today Mexican oil is under the control of the government.

"You would see many oil derricks in the country around Tampico and some steamships loading oil for the United States, Canada, and Europe.

"Southward along the coast from Tampico is Vera Cruz, largest seaport of Mexico. It is the chief port for Mexico City. In the harbor of Vera Cruz you would see ships from the United States, from Spain, and other European countries unloading manufactured goods. Vera Cruz ships metals from the plateau. She also ships petroleum, vanilla, sugar, coffee, and chicle.

"Yucatan grows the henequen plant. This plant, which likes the dry weather, has thick, heavy leaves with strong fibers, called sisal. Good, cheap rope and binder twine are made of sisal fiber. Mexico produces about half of all the sisal used in the world. Most of it is shipped through Mérida to be put aboard ocean ships at the seaport of Progreso. Much sisal is used in our country."

Mary referred to a map of Mexico and pointed to the plain along the Gulf of California. She said, "As winds in this part of the world blow from the

Atlantic most of the time, you would not expect much rain on the west coast.

"Streams fed by snow on the western Sierra cross the plain to the Gulf. The streams bring water for irrigating fields of tomatoes and other vegetables, which are shipped to the United States in winter. There are also groves of oranges and lemons in some of these irrigated valleys of northwestern Mexico.

"Some American tourists are finding that the west coast of Mexico, where the mountains come close to the sea, is a beautiful and pleasant place for a winter vacation.

"The Pacific Coastal Plain in the southern part of Mexico has more rain than the northern part. Here some bananas are grown, some rice, coconuts, and cotton."

1. Compare the inches of rainfall per year near the Isthmus of Tehuantepec with the amount of rainfall where you live. What kinds of crops are grown near your town or city? What can be grown in Tehuantepec?
2. Why do we call the oil industry an extractive industry?
3. How may the henequen plant be useful to you?
4. Why would you expect little rain on the plain along the Gulf of California?
5. Name the crops grown on the Pacific coastal plain of southern Mexico.

Products of the Templada. Robert told about the Tierra Templada, the zone of coffee. "This is a very pleasant part of Mexico, and it is too bad that there is so little of it. This land is found only on the mountain slopes and mountain valleys below 6,000 feet and above 2,000 or 3,000 feet. Most of this land is steep, and the farms can be only little patches of land here and there. If there is enough rain, this Tierra Templada will grow many kinds of products, but especially corn, coffee, and bananas. Bananas will not grow on the plateau, and so for a long time the farmers of the Templada have been loading bananas and garden vegetables on pack mules and donkeys and letting the animals climb up the mountain—a day's journey, two days' journey, or three days' journey—to the towns on the cool plateau. Some of the coffee goes down to the ships and across the sea."

1. Why are the farms in the Tierra Templada very small?
2. What fruit would you no doubt eat with your lunch in the Templada of Mexico?

The mountains and the plateau. Susan's group made a report on the mountains and the plateau. Susan said, "My brother was in Mexico City all last year. He was a student at the University of Mexico. He wants to learn Spanish and he wants to know the Mexicans. He says he likes the Mexican people. They are so friendly. He likes the weather, too, in Mexico City. There is bright sunshine, but it is never too hot. And the nights are cool. He wore his topcoat every time he went out at night."

Susan read the report. "Most of the Mexican plateau has summer weather between 60° and 70°—a bit warmer to the north. In winter there may be a frost or two, and snow falls in some parts, but most of the time the thermometer on winter days is between 50° and 60°. There is little difference in temperature between the seasons.

"Mexico's great trouble is that most of it does not have enough rain. Much of the country is a land of little rain and some of it is desert like parts of our Great Basin. Mexico City gets about 23 inches of rain a year—but there is less rain as you travel north. Fortunately, however, the rainfall is heaviest just when the crops need the water. Summer rain, plenty of sunshine, water from mountain streams for irrigation here and there, make the better parts of the plateau a good land for wheat, barley, corn, and beans.

"Corn and beans are the most common food in Mexico. The tortilla, the bread of the common people, is a thin pancake made of corn. Frijoles are boiled beans. Tortillas and frijoles are to the Mexican diet as bread, potatoes, and meat are to ours. Millions of people in Mexico eat little but these two foods, with much pepper for seasoning.

"A tortilla filled with meat hash, pinched together like a turnover and fried in lard, is sold on nearly all street corners of Mexico City. It is as popular as hamburger sandwiches are with us. This shows what becomes of some of the Mexican beef and other meats. The wool of the sheep and hair of the goats go to the Mexican textile mills for clothing and other goods. The hides of the animals are tanned for shoes and other leather articles.

"The Mexican plateau is really an extension of that part of our own country that is sometimes called 'The Great Open Spaces.' It is about as good grazing land for animals as the plains of western Texas, New Mexico, and Arizona. On the plateau and in other parts of the republic there are about ten million cattle, about half as many goats, about three million sheep, and other millions of pigs, horses, and mules.

"Mexico has been called the 'horn of plenty,'—plenty of minerals. Minerals are the chief wealth of Mexico. The Mexican plateau leads the world in the mining of silver. It also has mines of gold, lead, zinc, copper, and several other less known but useful minerals. The plateau is one of the richest metal storehouses in the world. There are many mining towns in the mountains and on the plateau, and minerals are leading exports of Mexico.

Ewing Galloway

The Mexican housewife shapes tortillas and then bakes them on a hot, flat stone.

"The biggest city on the plateau is Mexico City.

"Guadalajara is second in population among Mexican cities. It makes blue pottery and colored glassware—blue, green, amber, ivory, and a very beautiful black.

"Puebla has more than fifty cotton mills. Here spindles and looms are driven by water power from snow-fed streams. The mills of Puebla make manta, a kind of cotton cloth that sells for a low price.

"Leon is busy making leather goods, such as shoes and purses, and shawls.

"Monterrey, not far from the Texas boundary, is near the best coal mines in Mexico and has steel mills. It is unfortunate that Mexico has but little coal.

"The plateau has many other cities. Most of them are mining towns like San Luis Potosí. The towns receive ore from nearby mines. The ore is melted to get pure metal. The towns have railroads to carry the metal to Mexican factories, or to some Gulf port for shipment to the United States and other countries."

1. What is the temperature range in Mexico City in summer? in winter? Compare the temperature of Mexico City with the summer and winter temperatures of your area.
2. Give three reasons why wheat, barley, corn, and beans can be grown on the plateau.
3. What is the chief source of wealth on the plateau?

Mexico City. The following day Miss Brown talked about Mexico City. "May I begin my talk by saying that Mexicans call their capital city 'Mexico.' They call their country 'The Republic.'

"My trip really started at New Orleans. I went aboard an ocean steamer, painted glistening white. Everything on the boat was as clean as new snow. Down the Mississippi we steamed, through the flat lands of the delta, and then out into the Gulf. In three days we landed at Vera Cruz.

"After leaving Vera Cruz, our train ran for a while across the flat coastal plain and through fields of tobacco and sugar cane and groves of coconut trees. Then it began to climb through thick forests. As we neared Córdoba I saw fields of tobacco and sugar, and groves of orange and lemon trees, and coffee trees on the hillsides.

"I shall never forget the stop at Fortín. All about were azaleas, white lilies, gardenias, gladioli, and tuberoses. I bought a bunch of gardenias for a few cents. The same flowers cost about a dollar each in some United States cities.

"The train went through tunnels and over bridges and on to Orizaba. As I carried my bags from the car, I found myself puffing and my heart pounding a bit. No wonder! I was 4,028 feet above sea level, and my body was trying to get used to the height.

"Next morning the train really showed what it is to climb. Up we went—one mile in a distance of 42 miles. Below us rivers looked like silver threads, villages like toy houses, planted fields like a checkerboard. At about 8,000 feet our train crossed the hump and started down to the plateau and to Mexico City.

"I had come to Mexico's big town, with six times the population of Guadalajara, the second city, and twenty times that of Vera Cruz. I had come to a city in which one Mexican in every 13 lives and makes his living. If as many of our people lived in Washington, our capital, it would have more than ten million people.

"Why have so many Mexicans crowded into this very high valley fenced in by still higher mountains? I soon found the answer.

"Mexico is the capital. The President of the Republic lives here. Here the Mexican Congress meets. Here live and work the thousands of people who manage the government of the country.

"Also in the City of Mexico is the Cathedral, head church of Mexico, the University of Mexico, and libraries and museums. Thousands of visitors flock to Mexico City each year just to spend a brief vacation in the great city. People from the United States find it is a cool place for a summer vacation.

"Streams run down from the mountains around the city. They give water power and electricity. From Tampico comes oil. Water power and oil to run machines have helped to make Mexico the largest manufacturing center in the Republic. Factories in the city are busily preparing foods for the people to eat; clothing for them to wear; newspapers and books for them to read; and cigars or cigarettes for them to smoke.

"And I must not forget to tell you that the weather is a big city-builder. This is the way the Mexicans boast about their weather at Mexico City: 'Never too hot, never too cold, never too wet, never too dry—just right!' It seems a bit chilly to people from warm lands, but more and more Americans are taking their woolen clothes and going to Mexico City for a summer vacation.

"Sometimes at home in summer, when the temperature climbs into the 90's, I wish I were back in Mexico," says Miss Brown. "I am sorry I do not have time to tell you about my trip to see the new volcano, Paricutín, that started not long ago in a Mexican cornfield."

1. Follow on a map Miss Brown's trip from New Orleans to Mexico City.
2. Why do you think gardenias cost so much less in Fortín than they do in Chicago?
3. List six reasons why one Mexican in every 13 lives in Mexico City.

The future of Mexico. "I must also tell you," continued Miss Brown, "that most of the people in Mexico are poor, very poor. Here are some facts that tell you how poor they are and give the reason

Paricutín sprang from a cornfield and grew within four days to a 1500-foot volcano.

Three Lions

Southern Pacific Photo

Mexican pottery is handmade; therefore, no two articles are exactly alike in shape.

for it. Corn is grown from one end of Mexico to the other. The cornfields cover more ground than all the other crops grown, but the one state of Illinois grows six times as much corn as all of Mexico. For each person in Mexico there were only 280 pounds of grain of all sorts grown in that country during a recent year. In the United States we had 2,200 pounds of grain per person that same year. Sometimes the Mexicans have to buy corn, as well as wheat, from other countries because they cannot grow enough for their own food.

"You may wonder why Mexico grows so little grain. It is a land of little rain. Most of their land is too steep for farms or too dry for farms. For each person in Mexico there is less than one acre of harvested crop. In the United States we have 2½ acres of harvested crop per person. Most of the Mexican corn and wheat are grown on irrigated land, and the people are working hard to build dams to save more water to irrigate more land, but it takes a lot of work and there is not very much water.

"Why do they not have factories and make factory goods to sell? It takes steel to make machinery, and it takes coal to smelt iron ore and make steel. For each person in Mexico, less than 100 pounds of coal are dug in a year. In the United States we dig 7,000, 8,000, or 9,000 pounds of coal per person per year. Mexico uses only $\frac{1}{19}$ as much water power as Canada and you see there is but little coal.

"There are a few steel plants in the city of Monterrey, but Mexico has to buy most of its iron, steel, machinery, and many other things, or do without them. Before buying materials from other countries, Mexico must sell something to pay for what she buys, and this is what she sells—some winter tomatoes from irrigated lands on the west coast, some sisal from Yucatan, some coffee from the steep hills of the Tierra Templada, some bananas from lowland plantations, and then metals—gold, silver, lead, and zinc. Metals are the chief export.

"The Mexican people are trying hard to have better schools and to learn better ways of using what they have."

1. Discuss these questions with your classmates:
    a. Why are most of the people in Mexico very poor?
    b. Will Mexico be able to continue to depend on selling metals and other minerals to pay for goods from other countries?

Something to Do

1. Study pictures of the adobe houses of the Mexicans and make clay models of the houses. You may want to use the models as part of a collection of samples showing life in Mexico. Why are abode houses the best kind of shelter in this region?

2. Are there more differences between Mexico and the United States than between Canada and the United States? Discuss this question in class. Make two lists of the differences, one for Mexico and the other for Canada.

3. Add pictures to your scrapbook showing the people of Mexico, the land, and one of the unusual sights, such as Mt. Ixtaccihuatl.

4. Write a paragraph comparing the Mexican Indian's farm with a farm in our Corn Belt.

5. Make a pencil sketch or a blackboard sketch to show the three levels of land in Mexico. Label each with its Spanish name.

6. Give facts to prove these statements:
   a. Mexico is a very mountainous country.
   b. Mexico is a very poor country.

7. Learn to pronounce the names of these terms and places. Write an interesting fact to explain each one.
   a. Tierra Caliente
   b. Tierra Templada
   c. Tierra Fria
   d. Rio Grande
   e. Mt. Ixtaccihuatl
   f. isthmus
   g. Mt. Orizaba
   h. Lower California

8. You may want to read in a reference about the valuable woods that are found in the hot, wet part of the Tierra Caliente in Mexico. Make a report to the class on your research.

9. Do research on one of the following and present a written report on your topic to the class.
   chicle
   sisal
   vanilla
   tortilla
   frijoles
   Paricutín

10. Explain why vegetables and citrus fruits can be grown in northwestern Mexico.

11. Learn to pronounce and spell the names of the following Mexican cities. Add their names to your geography notebook and write one important fact to remember about each.
   Guadalajara
   Puebla
   Leon
   Monterrey
   San Luis Potosí
   Vera Cruz
   Orizaba
   Tampico
   Córdoba
   Fortín

Homer J. Smith

Skyscrapers show a modern Mexico City. This is Cinco de Mayo Avenida, 5th of May Avenue.

A Short Quiz

Rewrite the false statements to make them true.

1. Mexico is made up of more highlands than lowlands.

2. The "Trades" that sweep across the Gulf toward Mexico are dry winds.

3. Vera Cruz is an important port for Mexico City.

4. Coffee is grown on the Tierra Fria.

5. The Mexican plateau provides good grazing land for beef cattle, goats, and sheep.

6. Agricultural products are the leading exports of Mexico.

7. The southern part of Mexico lies in the Temperate Zone.

8. The eastern coast of Mexico is dry; most of it is desert land.

9. Mexico's farm crops and livestock products are exported to other countries.

10. Part of Mexico lies in the Tropic of Cancer.

Ewing Galloway

Tegucigalpa, the capital city of Honduras, is on a plateau. The cathedral in this city is a beautiful building. Do you think this city would have grown so large if it had been on the coast?

Chapter 34

Central America

A three-step land. Central America is like Mexico in many ways—for example, it lies between the Tropic of Cancer and the Equator, where winter and summer are both hot and where frost is unknown except on high mountains.

You see by the map that it is a three-step land.

If you should fly over Central America in an airplane from east to west, across Costa Rica, or Nicaragua, or Honduras, or Guatemala, you would see first the line of white where the waves break upon the beach, then the pale green leaves of the coconut palms which line the shore, and then the dark green of the forest that covers nearly all of the lowland. From the plane, you would soon be looking down on steep mountainsides, with sharp valleys. Here and there you would see waterfalls where a stream tumbles down from the mountain to the lowland. Next you are looking down upon the highland where you see fields, farms, villages, and even a few roads. Here and there you see a city. In Central America, as in Mexico, most of the people live on the cooler highlands.

You fly on toward the west. Again you are looking down on steep mountainsides. This is the western slope. You dash across a narrow plain of grasslands and ranches and you are again looking at the white surf—this time the Pacific shore. Central America is a three-step land and a three-strip land. Eastern strip, plain and lower slopes; western strip, narrow plain and lower slopes; and the third strip is the central highlands.

It was on the coast of Honduras that Christopher Columbus first put his foot on the mainland of America. He took possession of this land for the King of Spain. Spain ruled it until 1821, when Central America became independent.

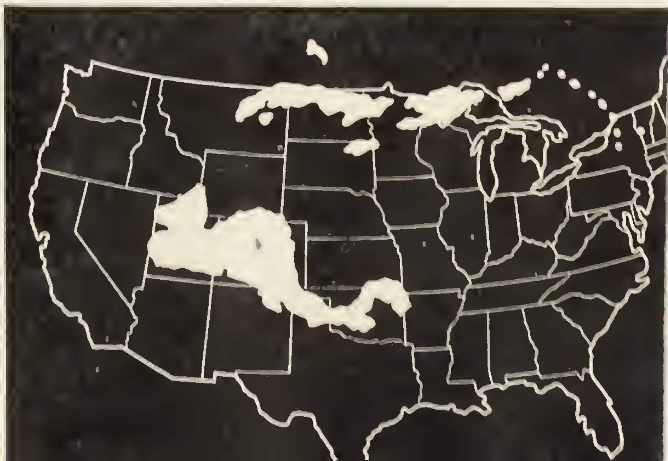
The Spaniards settled Central America in the 1500's. They soon found that the highland was the best place to live—but what a hard place to reach! On the east, heavy rain makes tangled forests and muddy ground. To get to the highlands from the east meant a terrible journey over a long trail through the jungle. On the west side, the plain is much narrower—there is less rain, less jungle, therefore, easier travel. The Spaniards who settled on the plateau went down to the Pacific Coast to meet ships that sailed the sea. How did they travel from their farms on the highlands to the little ports by the sea? Travelers rode horses. Coffee and other goods went on pack mules by long, narrow trails through the woods.

All through the 1500's, the 1600's, 1700's, and most of the 1800's, there was scarcely anything in all Central America that you would call a road. Sometimes on the uplands a clumsy oxcart bumped along through ruts and over stones.

If a young Spanish lady in San Salvador or San José got a piano, a great deal had happened to the piano before it reached the young lady. The piano was made in Europe, then taken apart, packed in packages that weighed about 100 pounds, and covered with waterproof wrapping. The packages were put in a ship that went around South America to a seaport on the west coast of Central America. There two packages, each weighing 100 pounds, were balanced across the back of a pack mule. The train of pack mules carrying the packages of piano parts started for the plateau. Some days or weeks later they reached the upland city. The packages were opened, and the piano was put together again, high up on the plateau of Central America. This plateau with its Spanish people was almost a little piece of Spain, although months away from Spain as people traveled in those days.

In 1852 a railroad was built across the Isthmus of Panama. This made the journey to Europe much shorter and quicker. The traveler in Central America took a steamboat down the west coast to Panama—went across by railroad and took a steamer for Europe. This was much quicker than a sailing ship going all the way around South America, but it was costly for freight. In those days about the only products that could pay

Compare the size of Central America and the West Indies with that of our country.



Ralph Hancock from Gendreau

Oxcarts and airplanes show old and new ways of travel in Central America.

the freight to come out of the plateau were coffee and hides.

Late in the 1800's a few railroads were built up to the plateau, but they, too, were from the west coast ports to the highlands, and still there are very few roads for wagons or automobiles even on the highlands. Travelers in Guatemala often meet strings of Indians carrying burdens on their backs—a living freight train.

There has been much talk and some work has been done to make a Pan American highway so that automobiles can go from New York to Mexico City, to Guatemala City, and on to Panama. Some people say the road should be finished on to Buenos Aires. But a lot of work is required before such a road can be used. Also, it will take a lot of work to keep the road in repair. Rain in Central America falls in torrents, and roads wash away in terrible fashion, unless they are very well built indeed.

Central America is not too large to be one country. But every country needs to have a government, and people need to be able to get from one part of the country to another in a reasonable length of time. In our own country in 1787, before we had steamboats or railroads, you know there were 13 independent states along the Atlantic Coast. We had been here nearly 200 years before there were any settlements west of the Allegheny Mountains. We settled the interior of North America only after we learned how to travel across it. Now you see why it was that Spain had six colonies in Central America in the early days instead of one. You see also why there are six independent countries now.

The Central American countries are like Mexico in that the Indians were there long before the Europeans came. These Indians had found out that the plateau was the best part of the country and there many Indians settled. In Central America today, as in Mexico, there are more Indian people than European people. In Guatemala more than half are pure Indians and most of the others are mixed. Honduras, Nicaragua, and Salvador have a larger percentage of mixed persons. Costa Rica has a larger number of European people than any of the other countries.

1. Describe in your own words the three steps or levels of land in Central America. Compare the surface features of Central America and Mexico.
2. What were the difficulties that hindered trade between Central America and Europe before 1850?

The coffee belt. In Costa Rica they say that they can grow anything that grows between Oregon and Cape Horn and so they can. But there is not room for much—a patch of wheat, barley, tobacco, alfalfa, a few Irish potatoes, but mostly they grow corn and beans.

These are the chief foods of the people here as in Mexico.

This climate also suits coffee, and for a long time sacks of coffee have been the chief export of the plateau.

Guatemala and Costa Rica boast of the very fine quality of their coffee and so does Nicaragua.

Little Salvador has been described as being almost one continuous coffee plantation from the western boundary to the eastern boundary. Everybody picks coffee for about two months. Farmers and their families work side by side with clerks and storekeepers from the towns; carpenters, road workers, office workers—all are coffee pickers for this busy season. If coffee fails or brings a poor price, there are sad days in the city of San Salvador.

1. What are the chief foods of the people on the plateau?
2. Why do they export more coffee than other farm products?
3. Why do you think coffee grows well in Central America?

The banana belt. After depending on coffee for more than 300 years, Central America got a great, new industry with the coming of this century—bananas. You know a ripe banana does not keep very long, but fortunately you can pick it while it is hard and green. Then if you keep the banana cool on the steamship journey from Central America to this country, you can get it to market before it is too ripe. For this reason, the banana ship is really a kind of big refrigerator. After we had refrigerator ships, people from Boston and other cities in the United States went to Costa Rica and started banana plantations.

The banana likes the hot and moist climate and heavy rains of the eastern coast of Central America, but the few Indians who lived in this part of Costa Rica did not want to work on banana plantations. They would rather hunt and fish and have a little garden patch. They would rather sit in the shade and go without the white man's things. Nor did the people on the plateau of Costa

Workers take bananas to market. Why are the bunches covered with leaves?

Hu Watson from Gendreau

Guatemala women are expert weavers. What is the source of their materials?

Rica want to go down into the hot land and work among the mosquitoes. They wanted to live where it is cooler. So the banana planters went over to Jamaica and hired Negroes to work their banana plantations. The Negroes had been used to hot weather in Africa. There are now many Negro villages on banana plantations in eastern Central America.

For many years eastern Costa Rica grew and shipped four out of every ten bananas that were eaten in the United States and Europe. Then came a blight which killed most of the banana plants in Costa Rica, and the banana growers went to Honduras to start new plantations. Now the lowland of Honduras is shipping many more bananas than is Costa Rica.

Far out in the ocean a big white ship steams along toward Honduras. In a modern air-cooled building at Puerto Cortez sits an American. He works for an American banana company.

Over his radio comes a message,—"Calling Puerto Cortez, Steamer Southern Cross arrives Thursday morning, need 50,000 stems."

The American picks up his telephone and calls the manager of the company's banana plantation some miles away. "Jack, the Southern Cross will be in Thursday, wants 50,000 stems. Begin loading at 9:00 a. m."

Thursday morning at dawn, many crews of workmen are on their way to the banana fields. Each crew has a cutter, a backer, some mule men, and mules. The cutter has a long pole with a knife at one end. He nicks the stalk of the banana plant just below the bunch of bananas. The stalk bends, and the bunch of green bananas drops gently to the shoulder of the backer.

The backer puts two bunches on each side of a mule, puts another bunch on the shoulder of the mule man, and five bunches of bananas are on their way to the cars on the plantation railroad. The cars full of hard green bananas begin to arrive just as the ship docks. In 12 hours 50,000 bunches are aboard.

Each bunch is packed tightly in the ship's hold so that it cannot shift and bruise the fruit. Cool air, about 57°, blows over the bunches. The bananas do not ripen during the voyage.

Banana plantations are by far the most important business on the east coast of Central America. There are some plantations now on the west coast at places where they can be irrigated. In Costa Rica, where blight killed the banana plants, the people now grow cacao and some rubber. They have recently begun to grow cinchona, a tree from the bark of which quinine is made. This is a medicine very helpful to people suffering from malaria.

1. Can you name any products other than bananas that are shipped under controlled temperatures?
2. Why must plantations be irrigated on the west coast but not on the east coast?

Panama. Where the lands of the Western Hemisphere are narrowest, there lies Panama. This isthmus became a crossroads long ago. Balboa and his men hacked their way through its tangled jungle to get a first view of the Pacific. Thousands of "forty-niners" tramped across to avoid the months-long trip by boat around Cape Horn to California and gold. Here the United States completed and opened the Panama Canal, August 15, 1914.

The canal builders found a low part of the backbone of North America. Here American steam shovels dug the pass—Guillard Cut. It took thousands of men ten years to dig this canal and build the huge locks.

Six thousand or more ships have used the Panama Canal in one year. The ships paid about 27 million dollars in tolls.

"Why so much money for such a short trip?" you ask. Your map will tell you. Trace on the map a voyage from New York to San Francisco by way of Cape Horn. Now trace it by way of the Panama Canal. You see, the canal cost a lot of money and it saved the ship the long journey around South America.

A ship enters from the Caribbean, steams to Gatun, and is lifted by three locks to the level of Gatun Lake. Gatun Lake was formed by building a dam in the Chagres River.

In Panama one person in every four lives either in Panama City on the Pacific Ocean or in Colon, on the Caribbean Sea. Bananas are the chief export of Panama.

Official U.S. Navy Photograph

Safely through the locks, the USS Missouri steams through the Panama Canal.

1. Review your definition of an isthmus. Do you know of any other isthmus besides Panama?
2. Why do you think toll is charged to cross some bridges and to go through canals?

The future of Central America. The airplane is more useful to the people of Central America than it is to people of the United States. Mountains and rains tell why. The airplane doesn't care if the ground over which it flies is rough.

Tegucigalpa, the capital of Honduras, 3,200 feet above sea level, is tucked away in a terribly rough country, but within 100 miles of the city there are a hundred or more landing fields. Planes carry mail, passengers, butter, eggs, and other food, cigars, mining machinery, gold and silver from the mines, and even cattle and bouquets of flowers.

As airplanes improve they will be a great help to the people of Central America, letting people travel about and helping them to market their crops and get goods quickly from the factories of the United States and Europe. There is not much promise of many factories in Central America, although there are many waterfalls for power.

Something to Do

1. Use a map to help you write the names of the six countries in Central America. Learn to pronounce and spell the names.

2. Check the location of Central America by giving its most northern and southern latitudes. What does the location tell you about the country's climate?

3. Compare the way a piano could be delivered to your home with the way one had to be taken to San Salvador before 1850.

4. Write a paragraph on the reasons for poor transportation in Central America. Be sure to include two natural drawbacks to good roads.

5. Why are there six independent countries instead of one country in Central America?

6. Write in your own words a description of the handling of bananas from plantations in Honduras to your grocery store.

7. You may want to do some research on the cinchona tree and on the uses of quinine.

8. Use your globe or map to trace possible routes a ship could take from New York to San Francisco. Why was the building of the Panama Canal important to trade?

9. Look for information and pictures on the way locks are used to lift and lower a boat in a canal. Make a report to the class on what you read.

10. Discuss these questions with your classmates:
    a. Why is the airplane more useful to the people of Central America than to people in the United States?
    b. Why are there so few good roads in Central America?

11. Add to your scrapbooks pictures and newspaper items about Central America.

12. Select three important facts about Central America that you want to remember. Write them in your geography notebook.

13. Use sand, clay, and heavy paper to build one of these scenes in Central America:
    a. a banana plantation
    b. a coffee plantation
    c. the Panama Canal

14. Do research on the trees and their uses in Central America. Compare the kinds of trees with those in your neighborhood. If there is a difference, tell what you think is the chief reason for it.

Market day in Guatemala is a busy time.

Hu Watson from Gendreau

A Short Quiz

Copy the following sentences, filling the blanks to make them true statements about Central America.

1. In area, Central America has _____ square miles than Mexico.

2. The east and west coasts make up two strips of land; the third strip is the _____.

3. The _____ coast has a narrow plain.

4. Heavy _____ is one reason for the lack of roads.

5. There are more _____ in Central America today than Europeans.

6. Jungles are cleared for the growing of _____.

7. The slopes of the mountains and the plateau make up the _____ belt.

8. Beans and _____ are the chief foods of the people.

9. Costa Rica and _____ export many bananas.

10. The Panama Canal has been in operation since the year _____.

(©) *Screen Traveler from Gendreau*

An ox-drawn cart brings workers to a banana plantation in Jamaica, West Indies.

Chapter 35

The West Indies

In order to have a clear understanding of the location of the West Indies, do the following map studies:

1. What group of islands lies between the coast of Florida and the Dominican Republic? To whom do these islands belong?
2. Sometimes the West Indies, except the Bahamas, are called the Antilles. Which is the largest of the Greater Antilles? Locate Cuba. How far is it from Florida? from Yucatan? Now follow with your finger the curve of the West Indies, locating Jamaica, Hispaniola, and Puerto Rico.
3. East and south of Puerto Rico you will find the Lesser Antilles. What is the name of the most southern of these islands?
4. What sea do the West Indies, Central America, and South America surround? Learn to pronounce and spell the name of this sea.
5. Locate the group of islands by giving the latitudes, longitudes, and the tropic within which most of them lie.

Columbus thought he had reached Asia when he saw the land of the New World. So he named the islands "Indies"—islands of the East. Other men from Europe sailed around South America and found the true Indies—southeastern Asia. After this happened the North American isles were called the West Indies—western islands of the East.

Cuba, almost as large as all the other West Indies, is a free country. Haiti and the Dominican Republic are also free countries. Together they make up Hispaniola. All the other islands belong to the United States or to some country in Europe.

The Bahamas. These 3,000 or more islands, islets, and rocks lie like a broken string of giant beads between Florida and Hispaniola. These islands are called the "Isles of June." Winter weather there is like June with us. Many persons from the lands of frost visit these warm islands. At times the Bahamas have a greater number of winter visitors than there are people who live on the islands. Taking care of these sun lovers is a big job in the Bahamas, especially in Nassau, the capital. The islands are made of coral limestone and of sand that the wind has blown up from the beaches. The soil is shallow and there is not much rain. Most of the people are Negroes who have a hard time to make a living on their little islands. Winter tomatoes are the chief export and fish the chief food product.

A great event in the history of America took place in the Bahamas on October 12, 1492. On that day Christopher Columbus stepped ashore on San Salvador, or Watling's Island as it is now called.

1. Why do the people who live in the Bahamas have a hard time making a living?

Trade wind isles. The other West Indian Islands are in the Tropics. They lie in warm sea water directly in the path of the trade winds. In this part of the world the "trades," as these winds are called, blow almost every day in the year. The trades usually blow from the east or northeast. The trades are pleasant sea breezes—warm, not hot; moist, not dry. If there are any mosquitoes, the wind blows them away.

The trades bring more rain to the side of an island that faces the wind, the windward side, than to the side away from the wind, the leeward side. If a trade-wind isle has a mountain backbone, the difference in rainfall between the two sides is often very great.

1. Explain in your own words or draw a diagram to explain the terms "windward" and "leeward."
2. How do you think water can be taken from the "wet" side of an island with a mountain backbone to the drier side?

Cuba, the world's sugar bowl. Cuba is about the size of Pennsylvania, only Cuba is drawn out long and narrow. If placed on the United States, the island would reach from New York City to the suburbs of Chicago. The roughest part of Cuba is in the southeast, where mountains pile up a mile and a half high. But most of the island has a gently rolling land, much like the better parts of our Corn Belt. This is a fine place for crops that do not like frosty weather.

Cuba sells more cane sugar than does any other country. Think of 10 freight trains rolling past you; think of 20 cars to each train. Imagine each car loaded with sacks of sugar. That gives you some idea of how much sugar Cuba sends to the United States and to other countries every day.

Cuba is just south of the Tropic of Cancer. Its summers are hot except in the mountains. In winter the temperature in Havana may drop to 50°. But that would be called a very cold snap indeed. Most Cuban winter days are mild and sunny. The most rain falls in the warmer months from May to October.

The wet summer makes sugar cane plants grow big. The drier season that begins in November increases the sugar in the stalks. It is also good weather for harvesting the crops. Sugar is grown in all parts of Cuba but mostly on the eastern half of the island. Many of the plantations belong to American companies.

The neck of Cuba west of Havana is tobacco land. Tobacco grown on these soils has a flavor much liked by those who smoke cigars. "Havana Cigars," made from tobacco that is grown in this section, bring a high price.

Tomatoes and other vegetables can be so planted in Cuba as to ripen in midwinter. This fresh garden produce appears in our food stores a few weeks earlier than do the same crops from Florida and the Gulf Coast.

Cuba also sends us grapefruit, pineapples, limes, and some bananas. Cuba's small daughter, the Isle of Pines, sends us grapefruit and has winter homes for Americans.

Cuba has more people than Kansas, Nebraska, North and South Dakota combined. Havana, the capital, has more people than has any city between Kansas City and the Pacific Coast.

One of the important jobs in Havana is taking care of visitors, chiefly people from the United States, who come to enjoy the springlike Cuban winter. The popular "Havana Cigar" is made in Havana. On the south coast, Santiago is the largest seaport. Each year many shiploads of iron ore and manganese ore go from Santiago to Baltimore and other United States ports to supply our steel industry.

"Rags or riches, that's the story of our island," say the Cubans. "When the price of sugar is high, we have money. When the price of sugar is low, we have hard times. We must grow less sugar and more rice, cotton, and other crops. We must raise more cows and other farm animals. We must have more factories and quick-freezing plants. We must stop being a one crop country." They are trying to do that in Cuba.

(©) *Screen Traveler from Gendreau*

A boat enters the harbor at Nassau in the Bahamas to exchange livestock for sponges.

1. Can you name five reasons why Cuba is the most important island of the West Indies? Use a map to help you with your answer.

Hispaniola. When Columbus returned to Spain he called on Isabella, the Queen. Columbus told the Queen about his discovery. "Your wonderful island of Hispaniola, the Spanish Isle, what is it like?" the Queen asked. Columbus, the Admiral, took a piece of paper and squeezed it in his hand. He laid the crumpled piece of paper on the table. "Your Majesty, the ridges in the paper represent mountains that cross this island from east to west. The hollow places in the paper represent valleys between and among the mountains. That is Hispaniola."

Hispaniola is not quite so large as South Carolina, but it has two governments, two peoples, two languages. Haiti is the world's first Negro republic. The people speak French because their country was once a French colony. The Dominican Republic, also called Santo Domingo, was Spanish. A part of its people are Spanish, but most are mixed European, Negro, and Indian.

1. Compare the population of South Carolina with the population of the Dominican Republic and of Haiti.

The Dominican Republic. Those valleys in Santo Domingo that face eastward toward the sea and receive the rain-filled trade winds are some of the richest farm lands in the world. The soil is very fertile indeed. Here grow sugar and cacao, the two big crops the Dominicans have to sell. Their third crop, coffee, grows on the lower slopes of the mountains.

The mountain valleys of this island that face west have less rain. But the mountains are soaking wet and send water down to the drier western valleys. The water is used to irrigate crops, especially sugar and bananas.

Haiti. Haiti has the same high mountains and dry valleys as the southwestern part of the Dominican Republic. Coffee trees grow wild on the mountains. The farmers have only to pick the berries to have coffee to sell. Because frost does not visit this land, the cotton plant lives on from year to year. But the people of Haiti know that it is not safe to depend only on coffee and cotton. They are growing other crops as well, especially sugar, bananas, and sisal. Banana ships sail around the coast of Haiti and get bananas from many small ports. The boats take the bananas to the United States.

1. Explain why both the windward and leeward sides of the Dominican Republic can be used for agriculture.
2. What are Haiti's chief crops?

Puerto Rico. The small island of Puerto Rico is only 100 miles long and 35 miles wide, but it has nearly two million people. Divide all the land evenly and there would be only a little more than an acre of ground for each person.

How do so many people in such a small space get enough food and other needed things?

1. Puerto Rico trade wind weather is seldom hotter than 90° in summer, and seldom drops to 65° in winter. Plants grow here all year round.
2. A mountain backbone squeezes water from the trades. Rain pours down—100 inches or more a year on the northern and eastern slopes. The farmers take some of the water by means of tunnels to the southern part of the island. With the help of water, crops can be grown on this leeward coast plain.
3. Sugar, that thirsty, warm-weather plant, finds Puerto Rico a perfect spot in which to grow. In some places as much as 6,000 pounds of sugar can be produced from the cane grown on one acre.
4. The United States uses shiploads and shiploads and shiploads of sugar, and we buy all that Puerto Rico grows because the island belongs to the United States.

Sugar in Puerto Rico grows chiefly on the coastal plain, with coconuts and many kinds of warm-land fruits. Farther inland are fields of tobacco. Higher on the mountains are the coffee farms. In the homes of the people, Puerto Rican women and girls make beautiful needlework. Much of this needlework is sold in New York. But the income is not enough to make the people rich for they do not have enough good land nor do they have enough food.

1. Compare winter and summer temperatures in Puerto Rico with winter and summer temperatures in your home area.
2. Why does the United States buy so much sugar from Puerto Rico?

Jamaica. Jamaica is a close twin to Puerto Rico. The two islands are about the same shape. Both have an east-west mountain backbone, a very wet northern side, a much drier southern side, and warm weather in the lowlands all the year.

Jamaica, however, is British. It sends to the motherland, England, and to its sister, Canada, bananas, sugar, rum, grapefruit, oranges, coffee, and cacao. Most of the allspice used in the world comes from Jamaica, and, of course, Jamaica ginger.

Mountaintop islands. East of Puerto Rico lies the big curve of the little islands of the West Indies, often called the Lesser Antilles. They form many groups of tiny islands—so many that we do not even call the roll of names. All, except the Barbados and Trinidad, are mountaintop islands—tops of volcanoes that were built up from the sea bottom.

One group, the Virgin Islands, belongs to the United States. The others belong to several countries in Europe. Most of the people are Negroes. They speak English, French, or Dutch, the language of the country that rules them.

Ewing Galloway

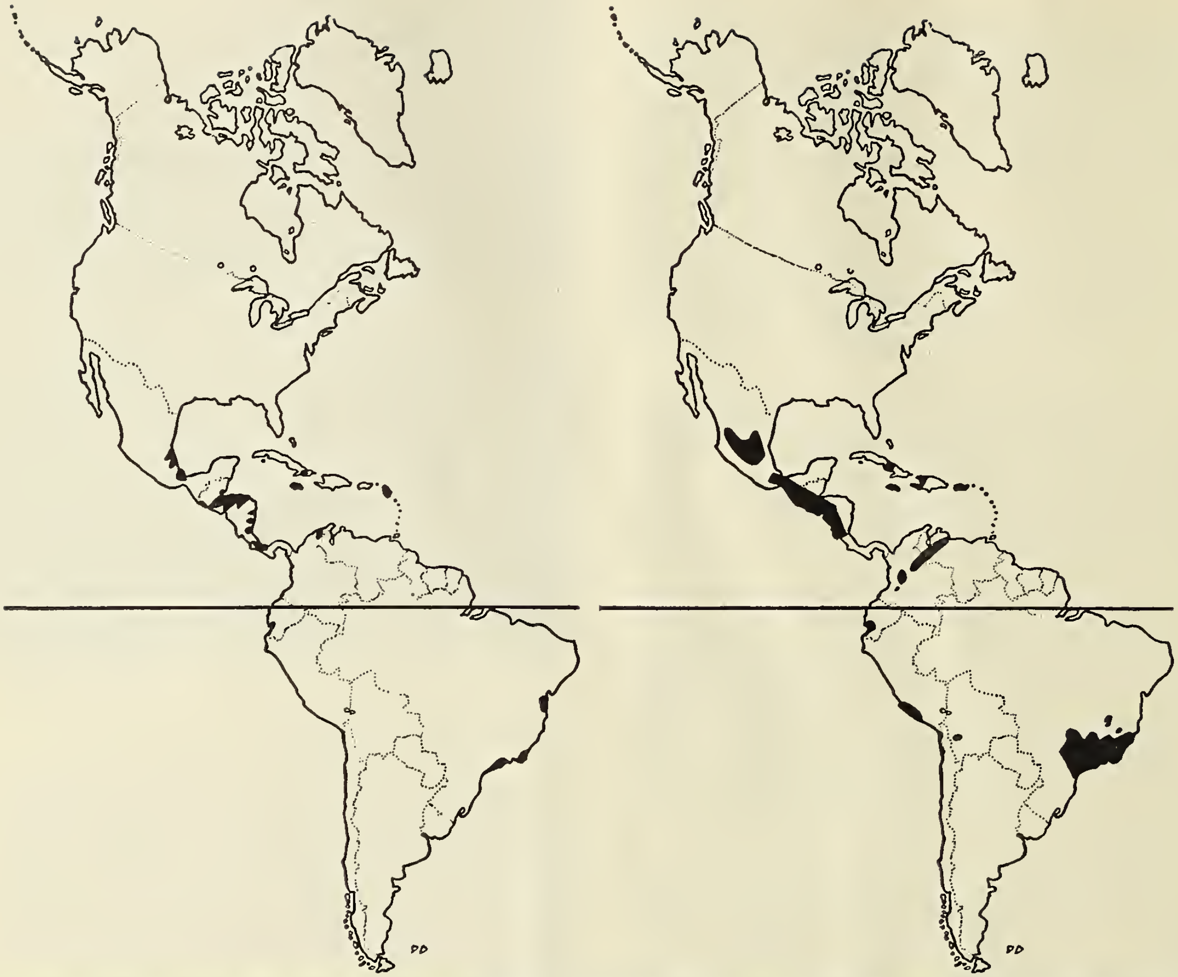
Trinidad's Pitch Lake has one of the largest known deposits of asphalt.

The Lesser Antilles are beautiful and interesting islands. Be sure to visit them if you get a chance. Steamships regularly take travelers on a cruise, and stop for a few hours or a day at island after island.

The Virgin Islands. "We must have a watchdog to guard the Panama Canal," said our Government in Washington during World War I. "It must lie directly in the path of warships that might come to attack the Canal." So, in 1917, during World War I, we paid Denmark 25 million dollars for the Virgin Islands.

Our Army, Navy, and Air Force have bases on these islands and on Puerto Rico. They keep close watch on the lands and waters of the Caribbean.

The people of these small hilly islands make their living chiefly by growing sugar, making rum and bay rum, and by taking care of winter visitors. The people on the other islands of the Lesser Antilles make their living chiefly by



Study these maps which show the distribution of banana and coffee crops in the Western Hemisphere. Describe soil and weather conditions that suit these crops.

growing sugar, cacao, coffee, spices, cotton, and warm-land fruits, such as bananas, grapefruit, oranges, and limes.

In the year 1763, England was planning to exchange all of Canada with France for one of these small West Indies—Guadeloupe. That was at the end of the war we call the "French and Indian War." England thought that Guadeloupe, with its sugar, molasses, and rum was worth more than all Canada. Benjamin Franklin persuaded the British not to make the trade.

Trinidad. To most people Trinidad means a pitch lake from which asphalt is dug for paving streets and sidewalks, and for roofing. The surface of this lake looks very much like the hide of an elephant. Walk on it and you do not sink. But stand still and your heels begin to sink slowly in the gray-black pitch. Chop out a truckload of the pitch and the hole fills itself in a day or two. Millions of tons of asphalt have been shipped to the United States.

But today pitch stands fifth among the products of Trinidad. This small island yields more petroleum than any other member of the British family of nations. And Trinidad sugar, cacao, and coconuts sell for more each year than does the asphalt.

Curaçao and Aruba. Two tiny islands in the Caribbean were so important during World War II that a German submarine crossed the Atlantic to attack them. The islands are Curaçao and Aruba. The islands have what may be the world's largest oil refineries. The oil comes from Venezuela but it is refined by English, American, and Dutch companies on these two small islands that are ruled by a European country, the Netherlands. Why did they not build their refineries in Venezuela? This story from Haiti explains the reason.

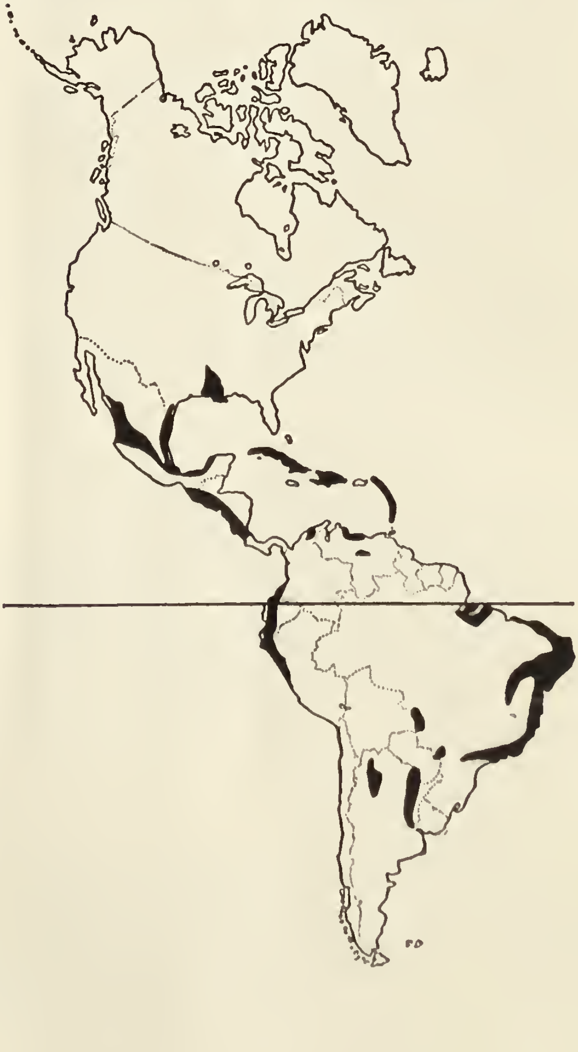
The shoe factory in Haiti. We were traveling in Haiti and saw a big shoe factory shut up tight. No shoes were being made.

The president of Haiti has to have money to run the government. He gets it by making the people pay taxes. But how can he get taxes from the West Indian farmer? In Haiti, Dominican Republic, all the Lesser Antilles, and in parts of the larger islands, most of the families live in tiny houses which they themselves may build. They grow some corn, beans, bananas, sweet potatoes, and cassava. Cassava is a root much like the potato. The people have a few stalks of cane to give them sugar. They have perhaps a coffee tree or two, a few cacao trees, orange trees, lime trees, and some other fruit we do not know. They grow a little tobacco for their own use.

The people, you see, grow nearly all of their own food. They may sell a little of some crop, they may work a few days for wages on a sugar plantation or a banana plantation and get a little money with which they buy a few cotton clothes, an iron cooking pot, some salt, a little dried codfish, and perhaps a bit of cheap salt pork from Chicago. You may indeed call this the simple life. It is much like that of many people in Mexico, Central America, and parts of South America. Some people say these are patch farmers.

Now how could the president of Haiti make these people pay taxes? He does it by means of a tariff. This is the way it works out. If a ship from the United States or Europe unloads some shoes and cotton cloth, the merchant who has bought these things has to pay a tax of a dollar a pair on the shoes and so much per yard for the cotton cloth before he may bring them into the country. The president gets the money, and the people must pay high prices for shoes and cloth.

Compare cane and beet sugar distribution. What growing conditions suit each kind of sugar?



Since the price of shoes was so high in Haiti, a man built a shoe factory and began to sell shoes. These shoes did not pay any tariff. The president missed the money he had been getting by the tariff on shoes, so he put a tax on each pair of shoes that was made in the shoe factory. That stopped the shoe factory. It could not pay this tax, so there stood the factory—closed.

Oil refineries were built in Curaçao and Aruba rather than in Venezuela because of high taxes. People with money are afraid to invest it in countries where they cannot be sure that the Government will treat them fairly. People who live in such countries have to export raw materials and buy most of their manufactured goods.

Something to Do

1. Learn to pronounce and write the names of four Greater Antilles. Add the names of these islands, their important cities, and chief products to your geography notebook.
2. Look for pictures of vacationists in the Bahamas. Use them to help you give a talk on why you would like to take a trip to the "Isles of June."
3. Explain why a trade-wind island with a mountain has different amounts of rainfall on its two sides.
4. You may want to do research on the growing of sugar cane or on sugar refining. Report to the class on your readings.
5. Make a list of the products Cuba has to sell to other countries. Make another list of the things Cuba needs to buy from other countries.
6. Write a paragraph explaining why the Puerto Ricans are not a rich people.
7. Draw your own map of Cuba. Mark in the following:
   a. the mountains
   b. Havana
   c. tobacco land
   d. Santiago
8. Discuss these questions with your classmates:
   a. In what ways are the lands and peoples of the West Indies different from those of the United States?
   b. What reasons are there for the differences in lands and peoples?
9. Copy the following names of cities. With each one write the island on which it is located.
   a. San Juan
   b. Kingston
   c. Havana
   d. Port-au-Prince
   e. Ciudad Trujillo
   f. Nassau
10. Look for information which you can tell the class on one of the cities listed in item 9.

A Short Quiz

Copy the following sentences. Fill the blanks by choosing from these words:

cold
moist
wet
north
south
Cuba
leeward
Bahamas
warm
dry
windward
tropics
east
west
England
United States
sugar
tobacco
cacao
asphalt

1. The largest island of the Antilles is ______.

2. The ______ are sometimes called the "Isles of June."

3. The Antilles are located in the ______.

4. The trade winds bring ______, ______ breezes to the islands.

5. The ______ side of an island gets more rain from the trades than does the ______ side.

6. Sugar cane requires a ______ growing season.

7. Hispaniola has mountains that cross the island from ______ to ______.

8. ______ in Puerto Rico grows chiefly on the coastal plain.

9. The Virgin Islands are an important military base for the ______.

10. Many tons of ______ are shipped from Trinidad to the United States.

Stories You Will Enjoy

Marcos, a Mountain Boy of Mexico by M. H. Lee—A. Whitman
Three in the Jungle by Karina Shields—Harcourt
Mouseknees by W. C. White—Random House
Island Boy by E. H. Holdridge—Holiday
Forgotten Tinca by C. I. B. Von Hagen—Nelson

Bananas, Coffee, and Sugar Cane

Lands with tropical or semi-tropical climates produce crops that differ from those of temperate or cold climates. Bananas, coffee, and sugar cane are among the products of tropical climate areas in the Western Hemisphere.

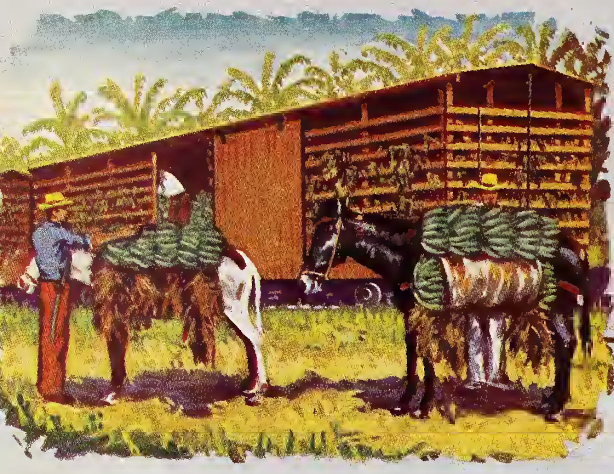
The greatest banana growing area in the world is in tropical Central America. But people in the temperate climates enjoy eating bananas because of their flavor and food value. The banana plant is a huge herb which sometimes grows as tall as 40 feet. After the plant bears fruit, it dies, and new shoots grow from the underground stem. Study the picture story of bananas—workers cutting weeds away from the growing plants, harvesting the crop, loading on railway cars at the plantation, shipping at the wharf, checking temperatures in storage places, and customers buying ripe bananas at a corner grocery store.

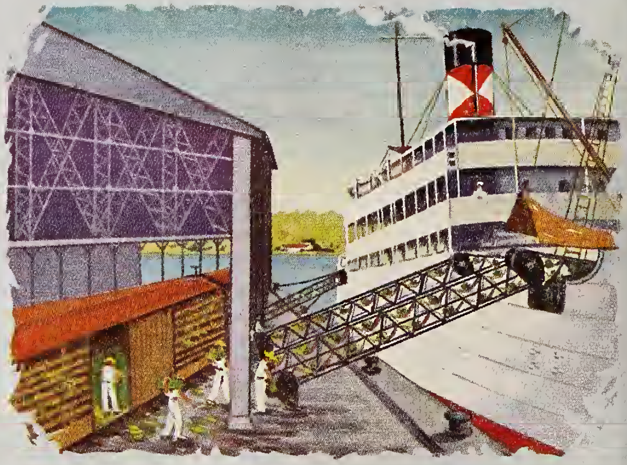
Coffee is a product of high lands in warm countries where the temperature throughout the year ranges from 60 degrees to 90 degrees. The coffee tree is an evergreen with dark green leaves. When wild, the coffee tree grows to a height of 30 feet or more, but in cultivated groves trees are kept, by pruning, to heights under 15 feet. Why do you suppose the trees are kept small? Coffee cherries are red when ripe, and workers swarm through the trees to pick them. Each cherry has in it two seeds or coffee beans. These beans are spread in the sun where workers keep turning them to dry. Sacking and shipping also are part of the process of supplying that steaming pot of coffee for the American breakfast table.

The third warm climate product pictured in this group of panels is sugar cane. Cuttings of cane are placed in long furrows and covered with soil. The cane grows rapidly to a height of 15 to 18 feet. Workers use long, heavy knives called machetes to harvest the crop. Ox carts transport the stalks to cars on plantation railways. From the plantation the stalks go to sugar mills where great rollers press the juice from the cane. The juice is boiled to get the sugar crystals which are processed and packaged in sugar refineries.

The story of each of these products—bananas, coffee, and sugar cane—is interesting to follow from raw material to consumer. You may want to choose one of the products to read about and report on to your class.

Bananas





Coffee

Sugar Cane

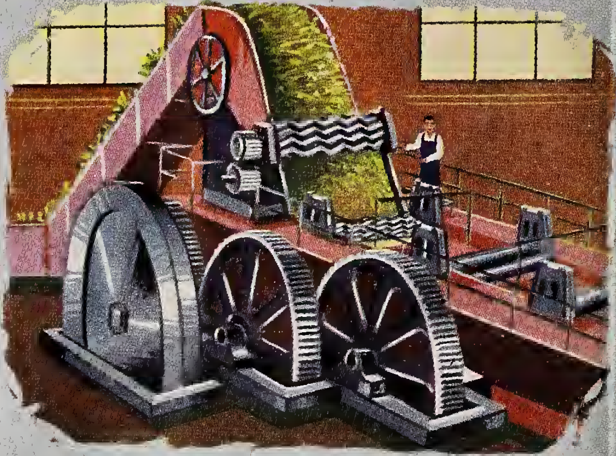


Foto E. Dahlburg

Wool for clothing and lamb and mutton for food come from this otherwise bleak section of South America—the windy plains of Patagonia.

Unit V—South America

Chapter 36

The New World

America gets her name. Columbus discovered America, but it was named for another man—Amerigo Vespucci. Columbus discovered America all right, but the other man wrote a book about it. Amerigo Vespucci was an Italian. He liked to study geography in his spare time and to make and collect maps and globes. He was in Spain in 1492 and made it his home for the rest of his life. He fitted out ships and made several voyages to the New World. He wrote letters to friends, telling them about the new land he had found. What he wrote was printed in nine editions, so it was Amerigo Vespucci who told Europe about the New World.

One of the friends to whom Amerigo wrote long letters was making a geography book with maps. In it he wrote, "As a fourth part of the world is discovered by Amerigo Vespucci, I do not see why anyone may justly forbid it be named America's Land, or America."

Men learned more about this new land and they found that two names were needed, North America and South America.

How much alike are the Americas? North and South America are much alike in many ways. In other ways they are very different. Both are big triangles—3,000 or more miles wide at the north and narrow at the southern ends—Isthmus of Panama and Cape Horn.

South America is the smaller of the two continents. But it is larger than Europe or Antarctica or Australia.

Both continents have tall mountains in the west. These highlands extend, with few breaks, all the way from the Aleutian Islands and the Alaskan shore of Bering Strait to Tierra del Fuego, the island which is the toe of South America. In South America, these western mountains are called the Andes.

Both continents have lower mountains in the east—the Appalachian Mountains in North America, the Guiana Highlands and the Brazilian Highlands in South America. Neither of these eastern mountains goes all the way south. One sinks into the Gulf Coastal Plain of North America, and the other sinks into the lowlands north of the Plata River in South America.

Both continents have a big plain between the eastern and western mountains. In North America this plain is named Great Central Plain. In South America it has several names: the llanos in the valley of the Orinoco River; the selvas in the valley of the Amazon River; the Gran Chaco west of the Paraguay-Paraná rivers. These three plains are all hot lands, but there are more plains in South America.

The pampas west of the Plata River have a warm summer and a mild winter.

The wind-swept high plain still farther south is a land called Patagonia. Strong winds blow in the high Patagonian plains; the strong winds are cold winds, too, in winter.

Both North and South America have a coastal plain along the Pacific Ocean. At no place is this shore strip more than 100 miles wide. In some places the coastal plain is pinched out in both continents, and the mountains come down to the sea. Both continents have lowlands facing the Atlantic that are wider than the lowlands facing the Pacific.

Both Americas have forests of great size. In northern North America the forest is called Great Northern Forest. In the northern part of South America the forest is called Great Amazon Valley Forest. But these forests are very, very different. In the Northern Forest you might find snow, blizzards, and very cold weather. There you might see the caribou, the beaver, and the gray wolf.

The South American forest is very thick. In many places you could not get ashore there if you came to it in a boat on the river. But you might see snakes 20 feet long, butterflies 12 inches across, monkeys swinging from tree to tree, sloths hanging upside down in trees, red, green, and yellow parrots, and many other kinds of birds and animals. The many different kinds of biting and stinging insects would keep you from having a pleasant time. It would be so stifling hot in that forest that you would not want to stay long.

How much different are the Americas? Mt. Aconcagua, in the Andes, northeast of Santiago, Chile, is the highest peak in the New World. It is only a few hundred feet higher than is Mt. McKinley in Alaska. But the Andes Mountains are the longest unbroken mountain wall on earth. Next to the Himalayas in Asia, the Andes are highest. They are so high that their tops have snow and ice all the time, even at the Equator.

South America has no such lakes as the Great Lakes of North America. On the northern coast of Venezuela is a body of water called Lake Maracaibo, but it is really an arm of the sea, in which the tide rises and falls. But South America does have Lake Titicaca, which is a lake more than two miles high—highest body of water in the world on which steamers run.

The Magdalena River in South America might be compared with the Mackenzie in North America; the Orinoco with the St. Lawrence; the Paraná-Plata with the Mississippi.

But North America has nothing to match the mighty Amazon. The Amazon is the greatest of all rivers. It carries more water than does the Mississippi in North America plus the Nile in Africa plus the Hwang-Ho in China. The Amazon swallows branch rivers like the Rio Negro almost without knowing it had a drink. And the Rio Negro is as long as the Ohio and carries more water. The Madeira River is another branch of the Amazon. From the source of its branches in the Andes to its mouth in the Amazon the distance is greater than from the Gulf of Mexico to Canada.

The Amazon starts high in the Andes almost in sight of the Pacific Ocean and pours its muddy flood into the Atlantic 3,000 or more miles away. This great river is so deep that ocean steamers can go more than 2,000 miles upstream to Iquitos, in Peru.

South America should really be named Southeastern America. You will see the reason if you look at the map and find out what part of North America is due north of the western tip of South America. The shoulder of Brazil is far out in the Atlantic Ocean toward Africa. Ships can sail from Europe to cities on the eastern coast of South America below the Brazil shoulder almost as quickly as ships can go from New York City to those same ports. Now that we have airplanes, one air route from Europe to South America follows the land on the west coast of Africa, and then makes the short sea-hop to the eastern point of Brazil.

South America was settled by Europeans before North America was settled. Since the time of Columbus, it has been easier to go from Europe to South America than from Europe to North America. The ship from Europe does not find such stormy seas, and the winds are more helpful.

The big difference between North and South America is the weather. The Equator cuts through South America just north of the Amazon River. And more than half of the continent is in the warm zone which we call the Torrid Zone, the Equatorial Zone, or just the Tropics.

There is no winter in this part of South America—no ice, no snow, except in the high mountains. There are but two seasons in much of this hot part, the rainy season and the dry season. The dry season is much longer in some parts than in others. Trees cannot live through a long dry season, but grass can. The parts that have a long dry season are grasslands.

The land south of the Plata River is the only part of South America that has spring, summer, autumn, and winter as we have in our North Central States. These seasons are the opposite of ours. Christmas comes in their summer. June, so pleasant with us, is winter in Argentina and in Chile.

South America has many kinds of weather not found in North America. Here are three samples:

A never wet land—there are places on the Pacific Coast of southern Peru and northern Chile where rain does not fall for years at a time; then, after a single shower, years may pass before the next shower comes.

A never dry land—the north Pacific Coast of Colombia is a land where rain falls almost every day in the year.

A never warm big city—strange to say, the never warm big city is almost on the Equator. This city is Quito, Ecuador—chilly all the year, because it is high up in the Andes, almost two miles above the level of the sea.

Something to Do

1. Place geography helps you to understand where land and water bodies, mountains, plains, and rivers are located. Place geography also helps you to understand the relationship of countries and continents in the development of resources and trading of products.

Following is a list of place geography items to help you compare North and South America in their physical features. Use a globe or a map and work with your classmates to locate the following:

a. the most northern and the most southern lands of the globe
b. the imaginary line that divides the earth into northern and southern hemispheres
c. the line that is 0° longitude
d. the most eastern longitude of North America
e. the most western longitude of South America
f. the part of North America that is due north of the western tip of South America
g. the part of each continent that is its widest area
h. the most narrow part of North America
i. the southern tip of South America; the island "toe" of South America
j. the western mountains in North America; in South America
k. the eastern mountains in North America; in South America
l. the Great Central Plain
m. the five areas of plains in South America
n. the coastal plain along the Pacific Ocean in both continents

2. Draw a large outline map of North and South America on wrapping paper or on the blackboard. Put in the mountains, rivers, plains, and other physical features. Learn to pronounce and write their names correctly.

3. Make a list of the ways in which the Americas are alike.

4. Discuss the ways in which the Americas are different, that is, discuss these points of contrast:

a. zones—Temperate, Torrid, Frigid
b. seasons
c. weather

5. Why do you think we should know more about South America? Discuss this with your teacher and classmates.

6. Make a list of 10 questions about South America for which you would like to know the answers. Check your questions as you study the following chapters.

A Short Quiz

Match the explanation with the term. Write the numbers of the terms and with each number write the letter of the correct explanation.

1. Andes
2. llanos
3. selvas
4. Patagonia
5. pampas
6. Amazon
7. Titicaca
8. Cape Horn
9. Aconcagua
10. tropics

a. a lake 2 miles high
b. temperate plains
c. tropical plains in Orinoco Valley
d. highest peak in South America
e. Amazon River Valley plains
f. southern tip of South America
g. region in the Torrid Zone
h. western mountains
i. largest river
j. wind-swept plains in south

Philip Gendreau

Cartagena, seaport and capital of Bolívar in Colombia, was founded in 1553. Its old streets are crooked but they are lighted by electricity. A wall encloses the city and its 85,000 people.

Chapter 37

Colombia — Venezuela — The Guianas

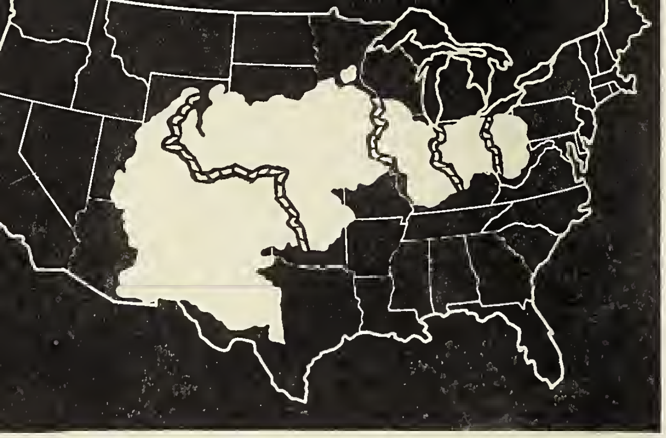
El Dorado. "We are coming to the land of El Dorado," said one Spanish sailor to another as their ship came near northern South America, near the countries we now call Colombia, Venezuela, and the Guianas.

"What is El Dorado?" asked the other sailor.

"Somewhere in these parts is a tribe of people who have much gold and fine jewels. Once each year their chief coats his body with gold dust, gets into his war canoe, and is paddled to the middle of a lake. He washes off the precious gold dust while his followers stand on the shore and cast into the water their ornaments of gold and emeralds. It is a part of their religion."

"Well," said the sailor, "we must find this lake of the El Dorado and dig up its treasure. It will make us all rich."

The Spaniards searched northern South America for El Dorado just as Ponce de Leon searched our Southern States for the Fountain of Youth, but they did not find it. Their search, however, took them through countries that we know have things more valuable than



The maps of the northern countries of South America—Colombia, Venezuela, and the Guianas—cover 15 states or parts of the states in our country.

the jewels that were thought to be in the lake of El Dorado. For example, Venezuela sends out for sale to other countries more crude petroleum than does any other country in the world. The Guianas have one of the richest deposits of bauxite on earth, and Colombia mines more gold than does any other part of South America.

Big and partly empty. The northern countries of South America are big. If laid on North America, they would more than cover all the land east of the Mississippi and south of the Great Lakes and the St. Lawrence River. About half of the land is almost unexplored; we know very little about it.

The Andes come marching northward into Colombia. They split into three ranks and cover about one-third of the country.

Between the mountain ranges are valleys. The Atrato River drains one of the valleys and reaches the sea close to the corner of Panama. The Cauca River, which flows past the city of Antioquia, drains a second valley, and the Magdalena River drains a third. The eastern ridge of the Andes, the Cordillera Oriental, divides south of Lake Maracaibo. The left prong continues northward along the Colombia-Venezuela border to the Caribbean Sea. The right prong swings past Lake Maracaibo, follows the coast of Venezuela, and points toward Trinidad.

To the east of the Orinoco River, the Guiana Highlands rise and march eastward to the sea. Several times as large as our New England States, they cover much of Venezuela and the Guianas. Mt. Roraima, 8,620 feet, the highest peak in the Guianas, stands where Venezuela, British Guiana, and Brazil meet.

The wide valley of the Orinoco River lies between the Andes and the Guiana Highlands. Much of the land here is flooded part of each year during the rainy season, dry as a chip the rest of the year, and hot all the year. This kind of weather with a rainy season and a dry season, makes grass, not trees. These grasslands are called llanos.

The streams south of the Orinoco Valley flow toward the great river Amazon. There is rain here for most of the year and therefore more trees. Here you are entering the hot jungles of the Amazon Basin.

1. Study a map to note the three ranges of Andes in Colombia. In what direction do they lie? How do you think these mountain ranges affect the trading by Colombians?
2. What mountains cross parts of Venezuela and the Guianas?
3. Locate Mt. Roraima.
4. Trace the courses of the Magdalena and its branches.
5. Locate and name the grasslands between the Andes and the Guiana Highlands.

No winter here. You may choose your weather in the northern countries of South America. You may have any kind from steamy hot to bitter cold, from soaking wet to dry as dust. But you may not have four seasons—only two—wet and dry.

If you like warm weather all the time, choose the lowlands along the coast or any low river valley. All are hot. If you like something a bit cooler, take a thermometer and begin to climb until you find a place where the temperature suits you. If you want to live where you will need a heavy overcoat every day and sleep under many blankets at night, keep on climbing toward the higher peaks of the Andes.

Colombia

Near neighbor. Breakfast in Miami, Florida, luncheon at Barranquilla, Colombia! In six hours or less we have flown from the United States to our nearest South American neighbor, the neighbor nearest our Panama Canal.

Colombia was named for Columbus. It stands third in size among the countries of South America. It is almost as large as ten Pennsylvanias, but it has fewer people than one Pennsylvania. Colombia is the only South American country that has shores on both the Pacific and the Caribbean.

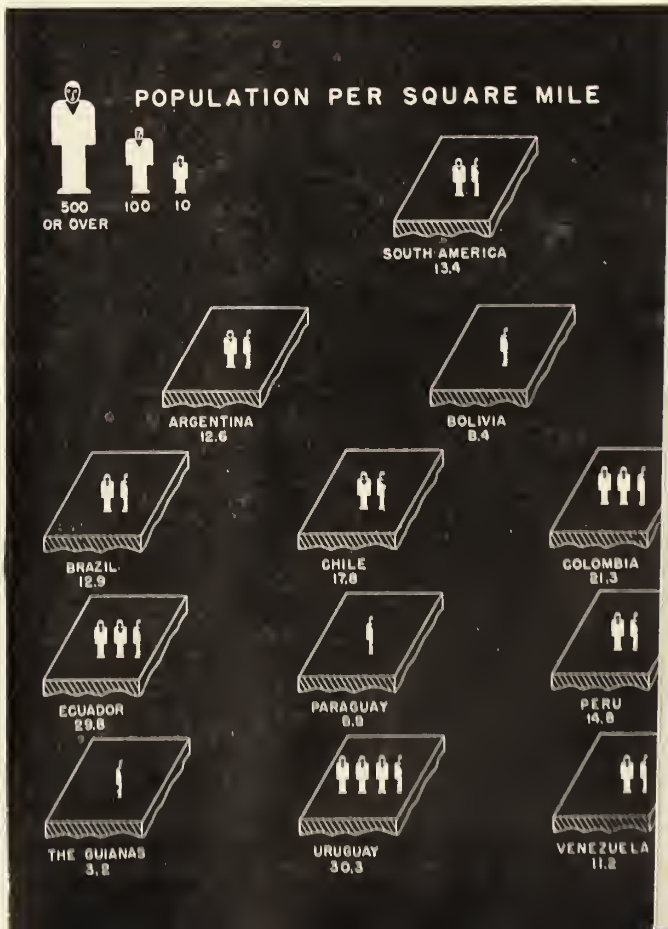
1. Compare the per square mile population of Colombia and Pennsylvania. Discuss reasons for the difference in population.
2. In what way is Colombia different from all other South American countries?

Barranquilla. There is a breeze blowing from the sea as we eat lunch at Barranquilla. It is the sea breeze which blows from the sea to the shore of nearly all hot lands. The sea breeze cools things a bit, but not much. We can expect the temperature at Barranquilla to be 80° or higher almost any day in the year.

The city is seven miles upstream from the mouth of the Magdalena. Ocean ships come to the docks. They bring clothing of cotton and wool, automobiles, rubber tires, machinery, farm implements, and hundreds of other things the Colombian people wish to find in the stores, but do not themselves make. The ships carry away coffee, petroleum, gold, platinum, and hides. Three of these exports—coffee, gold, petroleum—bring in nine of every ten pesos Colombia gets for products sold to other countries. Pesos are Colombian money used as we use dollars.

In recent years Colombia has had a new prosperity because of the discovery of petroleum. One part of Barranquilla is new. It has fine warehouses, good public buildings, and nice residences. Another part has houses of mud and bamboo.

What is the difference in population per square mile in South America and North America? Does "geography" have any effect on population difference? Discuss.



Barranquilla leads all Colombia in the manufacture of textiles, such as cotton goods, woolens, and rayons. One cotton mill in the city spins, weaves, dyes, and finishes 300,000 pounds or more of cotton a month.

As you walk through Barranquilla, you are amused by the stop-and-go signs. The red lights serve also as billboards. They flash "Buy a Ford" or some other short advertisements—in Spanish, of course, for Spanish is the language of the European people of Colombia and Venezuela.

1. How do you account for the high temperatures all year at Barranquilla?

Santa Marta. East of the Magdalena, the mountains come almost to the sea, and at the northern end of this arm of the Andes is the high, snow-capped volcano of Santa Marta. Santa Marta looks out over the Caribbean. It is over 17,000 feet to the top. It is higher than any mountain in the United States. Some of its foothills enclose the safe harbor of the town of Santa Marta.

Parts of the lower slopes of Santa Marta are splendid banana lands. This land is crossed by many snow-fed streams that are used to irrigate the banana plants in the dry season. These banana plantations are among the largest in South and Central America. Many of the plantations are owned by the same American companies that we read about in Central America.

Cartagena. Cartagena is another Colombian port that lies west of the Magdalena along the low, hot, trade-wind coast, not far from Barranquilla. The city was started in 1533 and soon became the chief Spanish seaport in South America. Its warehouses were stacked with gold and silver from Peru and Bolivia, ready to be sent to Spain. So pirates called often, attacked the city, and stole what they could. Cartagena has a canal which joins the Magdalena above Barranquilla and gives the city a good water road far into the country.

There are pipe lines that carry oil from the Colombian fields—wells that lie in the hot lowland east of the river. The pipes are laid beside the Magdalena and the canal. The pipes lead to big storage tanks beside the docks of the city.

Barranquilla has grown faster than Cartagena, so Cartagena is now Colombia's second seaport. The two cities have nearly all of the foreign trade of the country. Nearly all of the exports come down the Magdalena River to these two ports.

1. Trace the water route from the sea to Cartagena. What export product is carried along the same route?

Bogotá. After lunch at Barranquilla, we board a plane at the city airport. We soon look down on the Magdalena River and follow it southward. We see a large river steamboat and another and another. The boats carry freight downstream to Barranquilla and Cartagena, and carry freight upstream to the inland towns. We are looking down on the main commercial route of Colombia.

Our air liner follows the Magdalena for about an hour and then heads toward Bogotá. The temperature gets cooler as the plane slants upward toward the high plateau.

Over the hump we go and the fertile "sabana," the plain of Bogotá, lies below us. This highland plain is a kind of shelf or bench on the west side of the eastern range of the Andes. The city of Bogotá is at the far side of sabana, snug against the eastern mountain wall. Here live almost 400,000 people, 8,600 feet above sea level. That is a thousand or more feet higher than any mountain in the United States east of the Rockies.

We have exchanged the heat of the coastal plain for the refreshing, but chilly, air of the plateau. The thermometer reads 55° and the temperature is falling rapidly as evening approaches.

On goes heavy woolen clothing—overcoat buttoned tight—muffler around the neck. We are more than a mile and a half above the sea and we are cold when we are out-of-doors.

The people who live in Bogotá don't mind the cold weather. They are used to it. The men and boys wear a short cape in the morning chill. They throw back a corner of the cape when the sun is high.

These people like to stand on the street corners and in the streets and talk. A few friends meet. They do not shake hands. They just grasp one another by the upper arms and chat.

"That would block street traffic," you say. It does. At about 5 o'clock in the afternoon only trolley cars move on the main street in the business part of Bogotá. The street is a mass of men, clasping one another's arms, and having their "charla" or talk.

Students in Bogotá do much of their reading in the city parks. They gather together in groups out-of-doors to talk about their lessons. Bogotá has many students, and the city is much interested in education.

The city has a university much older than Harvard, our oldest college. The city has a great public library and many beautiful government buildings, a natural history museum, and a botanical garden. Men and women live here who know a great deal about writing, poetry, science, music, and painting. Bogotá, as we say, is a city of culture. Its people are well-educated and they speak pure Spanish. They call their city the Athens of America. They take pride in keeping their home town modern and up-to-date.

Three Lions

Boys in Bogotá play many of the games boys in Los Angeles and New York play.

The plain around Bogotá is about 70 miles long by 30 miles wide, and is rich and well-cultivated. Wheat is grown on this cool land. Many of the crops we find in the northern United States, but never an orange or a banana. They belong in the warmer lower lands.

Bogotá and the plain around it is a sample of the kind of neighborhood in which almost three out of every four Colombians live. Most of the larger towns and cities and most of the people of this big South American country are on tablelands, 3,000 to 9,000 feet above the sea, where the weather is delightfully cool and at times actually cold.

Most of the people of Bogotá are of Spanish descent. Most of the people of the highlands of Colombia are Spaniards or Indians or Mestizos. Many of the people of the coast towns are Negroes or mulattoes. They seem to be able to stand the hot, damp climate better than people of the European races.

The land of coffee. We leave Bogotá on the morning train at 7 o'clock. The thermometer reads 45°. At 3 p. m. we are at Girardot, in the hot valley beside the Magdalena River. We have gone down nearly a mile and a half. The thermometer reads 95°. For half a day our train went down, down, down. Between the chill of the high plateau and the heat of the river valley are long stretches of well-drained mountain slopes where the weather is neither too cool nor too hot. We see green forests on the mountainsides. No, they are not wild forests. They are groves of coffee trees that have been planted and kept trimmed to a height of 6 or 7 feet, so that the berries can be picked easily. Dozens of these cool little valleys nestle in the sides of the Andes, and there are many ranges of the Andes Mountains so there is plenty of high land that produces good coffee. Colombia leads the world in growing the kind of coffee known as mild coffee.

What a good crop coffee is for the highland people! The land is so steep that it would be very expensive to build good roads there. But the farmers have a way of taking their valuable coffee to market. They balance two sacks of coffee on the back of a mule or an ox. The animal will pick its way over the roughest ground, down, down, until at last the coffee is on a Magdalena steamboat on its way to the steamer at Barranquilla or Cartagena.

There are many coffee villages and many coffee slopes on the mountains that wall in the valley of the Magdalena and its branches. There are many coffee valleys also, back in the mountains on the small streams that flow into the Cauca River. There are some on the eastern slope of the Andes where the streams flow down to join the Orinoco and the Amazon.

And there is a splendid coffee country on the slopes and in the little valleys on the sides of the big volcano above Santa Marta. Coffee brings almost half the money that Colombia gets from products sold to other countries.

1. Locate on a map the coffee lands in Colombia.
2. How many feet above sea level are coffee lands? wheat fields?

Down the Magdalena. The train that brings us from Bogotá stops at Girardot on the Magdalena. That is the end of the road. The engines and cars were brought to Girardot in pieces on a steamboat and assembled there. At Girardot a small steamer is waiting. It carries us 57 miles downstream to Beltran, where rapids begin in the river and continue for 72 miles to La Dorada. Another railroad carries passengers and freight around these 72 miles of rapids. At La Dorada a much larger steamer is ready to begin its voyage of 560 miles to Barranquilla.

One hundred or more of these big boats carry freight and passengers on the river. These Magdalena boats have two stacks and a paddle wheel at the rear. They carry nearly all the goods that Colombia buys from or sells to other countries. Some passengers in Colombia nowadays go by plane, but most of them go by boat and train.

The Magdalena, as we say, is navigable. But sometimes boats are tied up for weeks waiting for rains to bring enough water to make travel by the river possible. Sometimes a boat gets stuck on a sand bar and has to wait a week or two until a rainstorm raises the water in the river. Another way is to unload the boat so that it may float away. Goods to be exported have sometimes been loaded and unloaded 11 times between Bogotá and the ocean steamers at Barranquilla.

Medellín. We leave the Magdalena steamer at Puerto Berrio and take a train for Medellín. You see these railroads are really branch lines to the river which is the main route of Colombia. The road from Puerto Berrio climbs and climbs to the plateau city of Medellín, second largest city in Colombia. Medellín has springlike weather all the year because it lies in a mountain valley about 3,500 feet lower than Bogotá.

The city is the center of one of the richest coffee and gold-mining districts in Colombia. It refines gold—separates the metal from the ore. It has assay offices to find how pure the gold is from the different mines. Gold is another of the chief exports of Colombia.

The Colombian uplands are rich in minerals. Colombia stands with Canada and Russia as one of the three leading countries of the world in the production of platinum. Colombia produces the world's finest emeralds, stones that sell for three to five times as much as diamonds of the same size.

Colombia has plenty of oil for home use and much to sell to other countries. The oil wells, to be sure, are in the hot lowlands east of the lower Magdalena. The neighborhood has heavy rains much of the time, is flooded some of the time, and is alive with mosquitoes all of the time. But the petroleum doesn't mind. Oil just flows on through pipes to the tanks and waiting tankers at Cartagena. Colombia does not use much of her oil. There are not many roads for automobiles to use. The mountains are too steep, the plains are too muddy, and there are too few people on the plains to build the roads.

Medellín has one of the largest and busiest airports in Colombia. One resident of the city raises orchids. He has 30,000 plants. His orchids leave Medellín by plane in the morning, are in Panama City the same afternoon, and in the United States the next day. This is a very interesting business, but the coffee plantations and the mines bring most of the business that makes Medellín a thriving city.

Look closely at your map and you will find the city of Cali on a branch of the Magdalena River. Cali is nearly as large as Salt Lake City. It is the fourth city of Colombia. It is larger than any city in six of our western states. The Cauca Valley here is 3,300 feet above the sea. This is higher than all but the very top of the Appalachian Plateau in Pennsylvania.

It is cooler here than in the low plain along the lower Magdalena. This part of the Cauca Valley is good farm land, very good. It is good for cotton, sugar cane, corn, and rich pastures.

Cali is the center for farm lands and many mines in the mountains that rim the valley. When a merchant in Cali wishes to ship something to the United States or Europe, he sends it by railway over the Andes to the Pacific port of Buenaventura.

1. Check a physical map of South America to find the elevation of the city of Cali.

2. Locate the port of Buenaventura.

3. Name the farm products of the Cauca Valley.

El Choco. A warm ocean current comes from the west and flows into that pocket of sea that touches the west coast of Colombia and the south coast of Panama. This is the Zone of Calms. Once a sailing vessel left Panama and drifted about in this Zone of Calms for 105 days before her captain could get her out into the ocean where there was a breeze to carry his ship southward toward Cape Horn. This coast of Colombia is called El Choco, and it rains every day, so the people say who live there. The air is always steamy. This makes the weather seem even hotter than it actually is.

The many rains make swamps in which mosquitoes and other insects breed. The insects carry fevers and other diseases to the people. The west coast of Colombia, you see, is not a pleasant spot in which to live, especially for white people.

Negroes seem to be able to live on this hot coast much more comfortably than do the whites or the Indians. The Negroes grow corn, bananas, and sugar cane. They can catch plenty of fish in the streams. If they want a little money there are several ways to get it.

Perhaps you will see a Negro gliding down a stream in a dugout canoe loaded with coconuts and bananas for the people of Buenaventura or some other small coast town.

Or he may have something for export—rubber that he collected from wild trees in the forest; some nuts of the tagua tree, called ivory nuts and used for making buttons; or gold or platinum, washed from the bed of a stream in the mountains which are close to the shore. This Choco part of Colombia has some of the richest deposits of gold and platinum in the country.

1. Why do you think Buenaventura has only one-tenth as many people as Cali?

Colombia, east of the Andes. Much more than half of Colombia lies east of the Andes Mountains. How would you get into this back country? How would you get out the rubber from your forests, the cattle from your grasslands, the minerals from your mines?

Remember—Colombian llanos and selvas have no railroads. They have no hard-surfaced roads for motor trucks. They have only the long water paths down the Orinoco and the Amazon. And the Colombian part of the Orinoco may be too shallow in the dry season to float any boat larger than an Indian canoe or a small motor launch.

And worst of all, the Colombian llanos and selvas have very few people. They are big and empty lands with less than one person to every 5 or 10 square miles.

Most of the people who live here are Indians who don't bother much with the rest of the world. Some of them gather a little rubber and balata from wild trees which they float in canoes to towns on the Amazon at the southern tip of Colombia. But they live almost without the use of money.

The Colombian part of the llanos has a few ranchers, very few. The people grow corn, cassava, bananas, and beans for food. They raise some cattle which they drive up the Andes for sale in the markets of Bogotá, but the quality of this meat is poor. Insects bother the cattle a great deal and there are many cattle diseases. We may learn how to control this, and then Colombia may send meat to markets across the seas.

But how did you answer the two questions about getting to eastern Colombia?

"We would fly in," you say, "and we would fly out some of the products we have for sale, and some of our products would go by boat down the Orinoco and the Amazon."

And maybe you will. The world of tomorrow may learn how to carry goods cheaply by cargo plane.

"We will have big ranches and raise many cattle on the Colombia llanos. The hot weather won't bother us much. We will raise our cattle scientifically as they do in some parts of the United States. We will build dams in the streams and make cheap electricity from the power of falling water. Then we will air-condition our houses, barns, schools, churches, theaters, our meat-packing plants, and other places of business. We will use the water of mountain streams for irrigation during the dry season.

"We will go into the very rich Amazon forests. We will get out valuable woods such as mahogany, cedar, and balsa. We will collect balata, a kind of gum used as a coating for golf balls and telephone wires; chicle for chewing gum; cinchona for quinine; sarsaparilla; and many kinds of fruits and nuts. These forests are several times as big as the State of Ohio.

"You may be sure that we will learn how to live in health and how to work comfortably in the Tropics."

This is the age of science, and men do know how to do these things to make it easier to live in the Tropics and make a living there. These things can be done and they are being done in some parts of the world. This work has scarcely begun in the Amazon forest of Colombia.

1. Review your understanding of the words you know in the following list. Learn the meanings of the ones that are new to you. Use each in a good sentence to show its meaning.

petroleum
bauxite
tagua
balata
chicle
cinchona
pesos
balsa
llanos
selvas

Venezuela, Land of Oil

Venezuela gets its name. As a Spanish explorer sailed along the shore of Lake Maracaibo, he saw Indian villages built on stakes in the shallow water near the shore. The streets between the houses were water, and the canoes of the Indians

A thunderstorm gathers over Maracaibo's oil fields. The city of Maracaibo has a population of more than 110,000. What is the chief work of these people? How large is Lake Maracaibo?

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reminded him of the gondolas and canals of the city of Venice, in Italy. This Italian city is built on many small islands and has water for streets, and the people travel about the town in boats called gondolas. So the Spaniard called the shore of Maracaibo, "Little Venice," Venezuela, and the name has stayed.

The pattern of Venezuela. Venezuela is larger than Texas and Louisiana together. You can choose your weather—cold to hot, dry to wet—and you can find it all in Venezuela. That country has all kinds of land from snow-topped mountains, 3 miles high, to hot, swampy, flooded valleys.

It will be easy for you to understand Venezuela, because it is so much like Colombia. Venezuela, like Colombia, is a country of sharp differences in short distances. Its parts so differ from each other that there is little that can be said of the country as a whole. So we divide it into pieces and talk about each piece. Venezuela has four parts, and three of them are like parts of Colombia:

1. A hot, moist lowland around Lake Maracaibo. This is like the lower Magdalena Valley.
2. A plateau like that around Medellín and Cali in Colombia.
3. A part of the llanos or Orinoco grasslands.
4. The Guiana Highlands.

1. Locate on a map each one of the four parts of Venezuela.

2. Which three parts are like parts of Colombia?

The Maracaibo Basin. The Maracaibo Basin has been called the "hottest and richest part of South America." Certainly the weather is hot, 80° to 90° any day in the year, a bit cooler at night, but not much. You must expect hot weather in the lowlands of the Tropics.

The big news about the Maracaibo Basin is OIL. One well here gushed a fountain of oil 60 feet high for nine days before the well drillers could put a cap on the well and get the oil. The Basin now has more than 4,500 wells that pour forth 200 million or more barrels of the good "liquid gold" a year. Venezuela stands high among the countries of the world in petroleum production. It is one of the richest parts of South America.

Lake Maracaibo is larger than the State of Massachusetts. Its outlet is a narrow neck of water, not more than 5 miles wide in some places. Maracaibo, the second city of Venezuela, stands on the west shore of the Narrows. It is an oil town busy chiefly in supplying the needs of the thousands of oil workers, who are drilling wells, repairing machinery, and getting out the oil. Boatloads of petroleum go out of Lake Maracaibo to the great refineries on the little Dutch islands of Aruba and Curaçao. Oil makes up nearly all the export that Venezuela now has to sell. And the tax on the oil makes the government of Venezuela feel rich at this time. There is some oil refined on the shore of Lake Maracaibo to get petroleum for the people of Venezuela to use, but the oil companies do not refine any more there than the Venezuelan Government makes them refine.

1. Check a map for the location of Lake Maracaibo and the islands of Aruba and Curaçao.

2. From the location of Lake Maracaibo, do you think it is a fresh-water lake or an "arm of the sea"? Explain.

The highlands. The map shows one prong of the Andes swinging east to join the coast ranges along the Caribbean. These mountains have peaks 15,500 feet in height. They get 40 to 75 inches of rain a year and cool, refreshing mountain winds. For example, the temperature in Mérida, a city in the mountains, seldom drops below 60° or rises above 75.°

Most of the Venezuelan people live in these highlands, just as people do in Colombia. Their chief money crops are coffee, grown on the well-drained lower slopes, and cacao, grown in the mountain valleys. Coffee is the largest crop Venezuela has for sale to other countries. Cacao is second. Farming is the chief occupation of the people, but their farms are small. Sugar cane, corn, beans, rice, tobacco, and cotton are grown, but there is none for export. The cotton crop is only about one-third as large as that of New Mexico. It is all used to make cheap cloth in a few small cotton mills in the plateau towns. Much cotton cloth has to be imported.

1. Why do most of the Venezuelans live in the highlands?

Caracas and its port. "Our house is Number 16 between the Towers and the Dead One." A Caracas girl is speaking. She is telling you where she lives in the city. Caracas streets are not named. The street corners bear such names as "The Wind," "The Losers," "Remove Shoes." The corners tell the block; the numbers tell the house within the block.

Caracas, capital and largest city of Venezuela, is sometimes called the "heart of the Andes." It lies in a fertile mountain pocket, 3,025 feet above the sea. The weather all year is like a mild spring day with us.

The plateau about the city has many farms that grow food for the people of Caracas. The farmers grow vegetables, sugar, coffee, and other food crops. They keep cows for milk and some beef cattle.

(©) *Screen Traveler from Gendreau*

A new housing development brings modern apartment buildings to Caracas. What other evidence of modern living have you found in this area?

The people of Caracas work at the big business of governing Venezuela. They also have some factories that make clothing, cement, and electricity for light and power.

Caracas is the birthplace and the burial place of Simon Bolívar, one of the great men of our western world. He is called "the Liberator," and sometimes "the George Washington of South America." This liberator fought Spain to win the independence of the countries we now call Venezuela, Colombia, Panama, Ecuador, Peru, and Bolivia.

La Guaira. Seven miles from Caracas, as the plane flies, is the Caribbean Sea and the port of La Guaira. The highway, 23 miles long between the two cities, may be the most beautiful one in the world. The highway is like a spiral staircase without steps. It is crowded with steep slopes, sharp turns, and almost breath-taking views. The traveler sees forest-covered mountains, deep gullies filled with orchids and other blooms. He gets peeps at the Caribbean glistening in the distance. At one very dangerous curve is a wrecked automobile. A sign on the car reads, "Slowly one goes far."

The sea gate to the Venezuelan Plateau lies at the foot of the staircase road. The railway from La Guaira to Caracas has to climb 3,300 feet, and it winds around even more than the highway does. The city of La Guaira hugs the shore because the mountains come so close and rise so steeply that there is little room for a town. Ships call at La Guaira mostly for coffee, cacao, and gold. They bring machinery, automobiles, and the many kinds of manufactured goods that one finds in the city stores. Many of the towns have electric lights from oil-driven engines and 11 towns have telephone exchanges.

1. Why do you think a railway must wind around steep mountains more than a highway does?
2. Will La Guaira become a larger city than Caracas? Why?

The llanos. In Venezuela the llanos cover almost as much land as three New York States. They have the Orinoco River as a water road for small ocean ships to Ciudad Bolívar, and for river steamers, during the rainy season, to San Fernando de Apure, about 275 miles farther west. San Fernando de Apure is the center of the most important cattle-raising part of the Orinoco Basin. There are no railroads and no hard-surfaced roads in the Orinoco Valley. People and goods travel through the llanos by boat or by mule or by trucks when the ground is hard in the dry season.

The Orinoco Valley gets 30 to 60 inches of rain in a year. Most of the rain falls from April to October. This is the season of damp, sticky heat. Grass grows as high as your waist—sometimes as high as your head. Then follows the burning heat of the dry season. The grass withers and becomes tough—very poor food with which to fatten cattle. The chief export from these cattle is hides. Poor cattle have hides even if the meat is not good.

Venezuela, nevertheless, has more cattle than people, and most of the animals live on the llanos.

The Venezuelan Government uses part of its oil-tax money to give farms to its people. The government is now trying to teach farmers how to grow crops and take better care of cattle in the now wet, now dry, but always hot llanos. To help the farmer get better animals, the government buys cattle from the United States. The government is building meat-packing plants, quick-freezing plants, and has stations for dipping cattle. The llanos of Venezuela and Colombia may become a meat export region like the Great Plains of the United States, but this will not happen until men have learned how to live and be healthy in the Tropics.

1. The area of the llanos is compared with New York State. How many square miles of land do the llanos cover? Use appendix figures.
2. What fraction or part of the area of the country are the llanos?

Ciudad Bolívar. The largest city in the Orinoco Valley—Ciudad Bolívar—is the market place for an area several times as large as New England. But this metropolis of this large area has less than 30,000 people. The stores of this small city sell the supplies that the cowboys, the llaneros, need and will buy.

Standard Oil Company of N. J.

The grassy llanos provide good grazing for many cattle. This herd is on its way to a fattening station in central Venezuela. Notice the hard-surfaced road. Do you see land good for farms?

Guiana Highlands. The Guiana Highlands are much like the Appalachian Mountains of the eastern United States, but the climate is different. There is no cold weather, and enough rain falls to give the highlands a thick forest from the big bend of the Orinoco to the sea. The forests have many kinds of woods, but it is very hard to get them out. These forests also have the rubbery gum—balata—chicle, dozens of kinds of fruits and nuts, and doubtless minerals and other riches still to be discovered. There are gold mines near the border of British Guiana and some diamond mines.

The hardest big job of all is getting the products out of the mountainous woods and away to market. Maybe the gold merchants have shown the way. They fly in about twice a year, trade with the native Indians for their gold, then fly out with the precious metal. The airplane, especially the cargo plane, is the great hope for starting industries in these and other jungle lands, just as it is in the cold forests.

Pearls. Many of the men in Caracas wear pearl stickpins in their ties. The pearls come from Margarita Island off the coast of Venezuela.

Pearls are found in oysters. Oysters live in the shallow waters about the island. To get the oysters a man will dive into the shallow water and grab as many oysters as he can in about two minutes. He cannot stay under water longer. He rises to the surface, throws the oysters into his boat, takes a few deep breaths, and dives again. The pearls are sold to dealers who visit the islands during the fishing season. Pearl oysters are not used for food, but the shells of these oysters are mother-of-pearl, used for making buttons.

Venezuela has only 600 miles of railway in all of its large area, which is nearly six times as large as the New England States. Since the discovery of oil, there has been a great change in travel. The government has spent some of the oil-tax money to build roads. There are many bus lines on the plateau. In one year enough bus tickets were sold to give every person in Venezuela about 30 rides. The people enjoy riding on busses very much. There are not many good roads, but one can now ride in his own automobile from Caracas to Bogotá.

1. Give facts to prove these statements:
   a. The Orinoco River is of less importance as a commercial route than is the Magdalena.
   b. Colombia and Venezuela both have large areas with few people.
   c. The Maracaibo Basin provides tax money, and the highlands provide food and crop exports for Venezuela.

The Three Guianas

Surinam. The three Guianas lie side by side along the north coast of South America. British Guiana belongs to Great Britain, Dutch Guiana, sometimes called Surinam, belongs to the Netherlands, and French Guiana belongs to France. The Guianas are the only parts of South America that belong to European countries. The three countries together are larger than all nine of our Northeastern States. Most of the Guianas look like a great green blanket, spread out on the earth. The greenness is the top of the jungle that covers most of these three European colonies.

A narrow plain runs along the coast of the Guianas. In places the plain is swampy. Dikes have been built to keep out the sea. Next there is a belt of low hills mostly covered with trees. There are some mountains and plateaus in the interior, but the European people have never made settlements there as they did in Colombia. The Guianas have no river like the Magdalena, which lets the Europeans ride in boats to the foot of the plateau in Colombia.

Guiana weather is a great bother, particularly to the white man. The trade winds and sea breezes keep down the heat somewhat along the shore. It is there that nearly all the people live in each of the three Guianas. Seldom does the temperature go above 90° in the shore lands, and it may drop to 75° at night. But the climate is always damp and muggy, and this makes the heat very oppressive. Georgetown gets 90 or more inches of rain a year and Cayenne gets as much as 170 inches.

This land of rain and damp heat seems to suit dark-skinned peoples much better than it suits white people. Surinam, for example, has some Indians who live in the forests and:

70,000	Negroes
46,000	people from India
34,000	people from Java
2,000	Chinese
2,000	white people

The people from India and Java were brought to Surinam to work in the sugar plantations. Almost all the white people live in Paramaribo. In the other Guianas also the population is mostly of colored peoples. In British Guiana nearly half of the people were brought from India.

French Guiana has less than one person to the square mile. British Guiana and Dutch Guiana, or Surinam, have about four persons to the square mile. Most of the area of the Guianas is wild forest where a few native Indians and a few Negroes who were once slaves live by hunting and fishing.

1. Within what degrees of latitude do the three Guianas lie?
2. If one degree of latitude measures slightly less than 69 miles, how far from the Equator is the most southern part of the Guianas?
3. Why have few settlements been made on the interior plateaus?

British Guiana. British Guiana is larger than two Pennsylvanias. Its farm lands are smaller than two Philadelphias. The farms are chiefly along the coast. They grow rice for the people to eat, and sugar for export and for making rum and molasses. In Surinam it is much the same.

British Guiana produces some gold and diamonds, but bauxite, the ore for aluminum, is the great export of British Guiana and Surinam. For several years they have shipped each year enough bauxite to load a ship every other day with 7,500 tons of this very useful ore.

To get bauxite, men clear a strip of forest. They drive in big steam shovels, strip off the surface soil, and shovel out the bauxite, which is a white clay. This ore is then crushed, washed, dried, and loaded on steamers chiefly for the United States. Perhaps the aluminum in one of the saucepans in your home was made of bauxite from the Guianas.

French Guiana. This colony which is larger than the State of Maine, mines some gold, but its 30,000 people have only about 8,000 acres in crops.

For many years France has had a large prison on Devil's Island on the coast of Guiana. There they keep about 2,500 criminals from France.

All the Guianas have the Ceiba, or silk-cotton tree. It grows wild and produces a cottony product called kapok. Kapok is used to stuff life buoys, life jackets, life preservers, sleeping bags, mattresses, and pillows.

(©) *William LaVarre from Gendreau*

An Indian hunter brings in an anteater. Its very long snout helps it to reach the ants.

The important thing about the three Guianas is that most of the land is unused. It is waiting for man to learn how to conquer the tropical forest and make good communities there. In all of the Guianas there are schools in the cities and towns and in some of the villages. Many of the Europeans are well-educated. Also some of the Hindus and some of the Negroes are well-educated. There are many differences between these people with our kind of education and the forest people who have only the forest for their school.

1. Give the reasons why most of the people of the Guianas live on the narrow plain along the coast.

Something to Do

1. Give reasons to prove true the statements on the following page.

a. Wheat is grown on the plain around Bogotá, but never is an orange or a banana grown.
b. Barranquilla is located on the crossroads between North and South America.
c. The Magdalena is a navigable river.
d. Colombia does not use much of her petroleum.
e. The airplane may be part of the answer to the development of eastern Colombia.

2. Choose one of the following topics about Colombia and prepare a talk on it. You may want to get some information on your topic from a reference.

a. Variety of crops because of differences in elevation
b. Dependence on rivers for trade
c. Overcoming transportation difficulties in Colombia
d. Agricultural products
e. Forests and mines
f. Manufacturing

3. Select one of the six leading cities of Colombia. Write a paragraph telling what you would like to see if you could visit the city.

4. You may want to read again in Chapter 35 about the oil refineries in Aruba. Why do you think the companies prefer to refine oil outside of Venezuela?

5. Tell how the development of the oil industry has helped Venezuela.

6. Can an extractive industry, such as petroleum or coal mining, be carried on permanently? Explain.

7. Perhaps you would like to do some research and report to the class interesting information on one of these topics:

a. Simon Bolívar
b. pearls
c. bauxite
d. kapok

8. Are there unusual names of streets in your town? List the names of five streets you know and try to think of reasons for their names.

9. Because of the extreme seasons of rainfall and drought, drainage and irrigation are necessary for farming in the llanos. Discuss this with your classmates.

10. Learn to pronounce and write the names of the five cities of Venezuela given in the next column. Identify each by giving an important fact.

Maracaibo
Mérida
La Guaira
Ciudad Bolívar
Caracas

11. The word "Guiana" comes from the Indian and means watered country. Why does the name apply to this area of South America?

12. Make a drawing to show the kinds of land and the crops produced at different elevations in the countries of South America that you have studied.

13. Collect pictures for your scrapbook. You will want to look for illustrations of coffee groves, banana plantations, fields of sugar cane, oil derricks, and barges on Lake Maracaibo, cattle on the llanos, and other subjects you consider important.

14. Write a paragraph on each of the countries listed below. Tell what each country produces that we use in the United States.

a. Colombia
b. Venezuela
c. The Guianas

15. List all things you can think of in which aluminum is used.

A Short Quiz

Write the sentences, choosing the word or phrase from the parentheses to make the statement correct.

1. The main commercial route of Colombia is the (Magdalena, Caribbean, Panama Canal).

2. Most of the larger towns and cities of Colombia are on the (lowlands, tablelands, mountaintops).

3. Groves of coffee trees are found on (mountain slopes, plateaus, lowlands).

4. Weather in the tropical lowlands is always (cool and dry, hot and moist).

5. The highlands of Venezuela have a (cold, temperate, tropical) climate.

6. The main route through the Venezuelan llanos is the (Bolívar, de Apure, Orinoco).

7. The Guiana Highlands are much like the (Rocky, Appalachian, Andes) Mountains.

8. People who live in the forests of Colombia, Venezuela, and the Guianas eat (cassava, citrus fruits, cereals).

9. (Petroleum, cotton, sugar cane) is the chief export of Maracaibo.

10. The west coast of Colombia has (pleasant, healthful, hot) weather.

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The photographer gives us a panorama of Rio de Janeiro from Corcovado, the peak which rises 2,300 feet above the city. Do you see land that looks good for market gardens?

Chapter 38

Brazil

The size and parts of Brazil. Not long after Columbus discovered America, a plan was made to divide South America into two parts. The King of Spain was to have the western part and the King of Portugal was to have the eastern part.

The part that the King of Spain got has become eight countries, but the Portuguese part, which is almost half the continent, has remained one country—Brazil. Its full name is Estados Unidos do Brasil, or the United States of Brazil. Brazil has twenty states; together they are larger than the United States. Nature has divided the country into five natural parts, the Amazon Valley, the Atlantic Coastal Plain, the Eastern Highlands, the campos or tropic grasslands, and Southern Brazil.

1. Look at a physical map of Brazil to find the five natural parts or regions in Brazil.
2. Compare the size of Brazil with other South American countries.
3. Write five questions about Brazil which you would like to have answered. Check them as you read the chapter and find the answers.

Sugar, slaves, and cattle. The Portuguese settled in Brazil soon after the

Brazil's map covers most of our country and spills over into Canada and the Gulf of Mexico.

discovery of America. The kings of Portugal gave the land away to their friends in large tracts. Some of the tracts were as big as one of our counties.

The first Portuguese settled on the coastal plain near the sea and had sugar plantations. For two hundred years sugar, molasses, and rum were the chief exports. These settlements were close to the coast between the ports of Santos and João Pessoa.

Some of the early settlers went to the plateau. They raised cattle on the grassland and exported the hides. About one hundred years ago they began to grow coffee on the highlands back of Rio and Santos.

The Portuguese settlers brought slaves from Africa to cultivate their sugar plantations and later their coffee plantations. In 1888 the slaves were set free to do what they pleased. Many of them moved northward toward hotter coast lowlands.

1. Check the appendix figures to compare Brazil with the United States in size and population.

Europeans move to Brazil. Since 1890, the population has increased rapidly. Hundreds of thousands of people came out from Italy, from Portugal, from Spain, and from other European countries to make homes in Brazil. In the last half of the 1800's, railroads were built from some of the port cities to the highlands. But most of the railroads went from the two ports of Rio de Janeiro and Santos. Most of the European immigrants went to live in uplands, or settled in the cooler states farther south. Meanwhile, the Negroes kept on leaving the upland region where coffee is grown. They went to the coastlands between Rio and the east point of Brazil. Brazil now has a part in the south where most of the people are of European descent; a part in the east where many people are mixed European and African; and in the Amazon Valley and the west is a part where most of the people are Indian or mixed Indian and white.

The highlands and the coffee boom. After the railroads from Rio de Janeiro and Santos made it easy for the new settlers to go up into the plateau country, the coffee business had a great boom. A plateau landowner would tell an Italian or Portuguese immigrant that he could use a certain piece of land for five years. He could have the land rent free if he would also plant coffee trees for the owner. He could grow corn and beans for his own use between the little coffee trees. All the corn and beans would belong to him, and the coffee trees would belong to the owner of the land. By the end of the five years the owner had a nice coffee plantation, made at no cost to himself, and the immigrant had supported himself for five years with the crops that he grew between the rows of coffee trees. Then the landowner let the immigrant begin again on another tract of land. Again, at the end of five years, there was another coffee plantation for the landowner. This business went on until now Brazil has about 75 times as many coffee trees as persons. Some of the coffee plantations are so big that the owners built narrow gauge railroads to carry workers and coffee about the plantation. It is not hard to guess why coffee became so cheap that no one could make money growing it. Something had to be done about this, and the Brazilian Government began to buy the coffee and store it so there was not so much to sell and the price would be better. But after all, what could they do with the coffee? It keeps well when stored, for years and years. If the government sold the coffee it had stored, that would bring down the price again. So the government began to burn coffee. About 7,000,000 bags were burnt each year for several years. Millions and millions of bags of coffee were burnt. The government spent too much money buying coffee to burn, so it finally gave up buying coffee. Some people now have learned to make plastics out of coffee beans. Perhaps that will help the Brazilian coffee growers.

1. What do you think "narrow gauge" means in a railway?

"Fomento." Years ago when the price of coffee was high and the price of rubber was high, Brazil had two chief exports—rubber from the Amazon Valley and coffee from the upland plantations near Rio de Janeiro and São Paulo. There was also some sugar from the coast north of Rio.

The price of rubber went down. The price of coffee, as you know, went down. Sugar beets and Cuban plantations made the price of sugar go down. Then the people of Brazil began to talk of "fomento," which means develop—or diversify—grow more crops—get more industries. And Brazil has been doing that. The people made many cacao plantations on the plain near Bahía, and the exports from that city make Brazil one

Even the children help with drying coffee beans in the hot sun of Brazil. You may want to read about two ways of curing coffee, the "dry" and the "wash" processes.

Three Lions

of the leading exporters of cacao beans. The city of Bahía has as many people as Houston, Texas, and Recife, a port of sugar, fruit, and cattle, has as many people as New Orleans, Louisiana.

The cattle from the ranges of the far interior are not good for beef. They have only a poor kind of grass to eat. Besides, they have many ticks and some diseases. The Brazilians improved and developed their cattle industry by importing good breeding stock and by fighting the ticks and diseases. The lean cattle now come down from the interior to fatten on corn, which is grown on the farms near São Paulo and farther south. Indeed, the corn crop of Brazil is of more value than the coffee crop. The corn is not exported like coffee. The corn stays home to feed the people; to feed the swine that make pork; to feed the cattle that make more beef than the Brazilians use. São Paulo now has meat-packing plants like those in Chicago and Omaha, and Brazil exports some meat to Europe.

Cotton is another crop that has been much in the mind of Brazilians of late. In the 1930's the United States grew less cotton than it had been growing, and Brazil began to grow more than it had been growing. Whenever our cotton trade gets into trouble, Brazil grows more of it. Brazil has much land with cotton climate.

The Brazilians now use two words when they talk of the future—they talk about "fomento," diversity, and "communicãoes," communications. Now that there is better steamship service along the coast and more railroads to cities and towns and farming country, more highways, automobiles, and trucks, the people have begun to grow oranges in a large way. In 1921, they grew only 2 million boxes of oranges; in 1940, 35 million boxes. That is more oranges per person than we grow in the United States. Several million boxes are exported, chiefly to Argentina and England—but most of the oranges are eaten by the people of Brazil. Oranges have made a great improvement in the health of the people. Millions of bunches of bananas are grown. Some are exported to Argentina and some to Europe, but most of the banana crop is eaten in Brazil.

1. With what area or region in the United States can you compare the part of Brazil that produces corn, hogs, cattle, coffee, and cotton?

Factories and cities. Brazil has had a new export in recent years—cotton cloth. They have pushed "fomento" so much that now dozens of cotton factories are in São Paulo and some in Rio de Janeiro and other cities. The factories make most of the kinds of cotton cloth the people need, and some is left to send to other South American countries. No other American country south of the United States, or any country in the Southern Hemisphere, makes or exports much cotton goods.

São Paulo — a booming city. We have read that the city of São Paulo is the capital of coffeeland, but São Paulo is more than the world's coffeepot. It is the business center of Brazil. The state of São Paulo has less than one-thirtieth of the area of Brazil, but the people pay 60% of the taxes of the Brazilian Government. The city of São Paulo has 1200 or more factories, the largest of which are rayon mills and tire factories. The factories make some rubber tires for export.

Forty miles east of São Paulo on the coast is the city of Santos. Santos is a funnel city, the port of São Paulo. The people of Santos are busy loading and unloading ships, taking out goods for São Paulo—machinery, motor cars, coal and coke, wheat, and hundreds of other things that Brazil needs but does not make. The ships leave Santos loaded chiefly with coffee, cotton, frozen and chilled meats, hides, and skins. About half of the foreign trade of Brazil is with the United States and nearly all the rest is with Europe, and Santos is the leading port.

São Paulo has a dozen times as many people as Santos. It is more comfortable on the cool plateau than on the hot lowland by the sea. No business goes to Santos unless it has to be there.

For hundreds of miles along the east coast of Brazil there is no large river that flows into the ocean. The Brazilian highlands are highest near the coast and they slope toward the interior. Streams rise near the coast and flow toward the interior, making a long journey to the sea near Buenos Aires or in northern Brazil. The edge of the plateau toward the Atlantic is in many places just a high mountain with only one side. The Brazilians call it Serra do Mar, the Mountains of the Sea. The people of São Paulo said, "We will build dams in some of the streams and make lakes. We will make canals and lead the water from the lakes around through a low place in the top of Serra do Mar. There we will turn the water toward the sea. We will carry it in pipes down the mountainside and drop it half a mile to the plain below. At the foot of the drop we will place turbines and dynamos. This will make all the electricity we need for ourselves and Santos." And they did. The power of 380,000 horses charging down the east slope of the Serra do Mar lights São Paulo and provides current for factories, radios, electric irons and stoves, and dozens of other uses.

Black Star

São Paulo is one of Brazil's modern, rapidly growing cities. What are some of its businesses?

1. Explain the term "funnel city" and tell why it applies to Santos.
2. How does Santos remind you of Vera Cruz, Mexico?

Rio de Janeiro. On the coastal plain northeast of Santos, is probably the world's most beautiful city—Rio de Janeiro. When seamen from Portugal sailed into the bay, in January 1501, they thought the bay was the mouth of a wide river. They named the place Rio de Janeiro, River of January.

Rio's pear-shaped harbor—narrow end toward the sea—is dotted with 100 or more islands. At the left, as one enters the bay, is the Sugar Loaf—a bare rock that rises directly from the sea to a height of a half mile.

At the top of another rock, half a mile high, stands a statue of Christ. In the background of the white statue of Christ are the Organ Mountains. One of the rocks, which the people call the "Finger of God," points skyward like the first finger of a giant hand. The other peaks form the knuckles of what looks like a giant, closed fist. It is thrilling to stand at the foot of the statue of Christ as evening approaches and watch the shadows from the peaks steal across the bay. The lights of the great city begin to come on—here a light, there a light, and then lights everywhere—like millions of big fireflies.

The Italians have a saying, "See Naples and die." A better saying for the capital of Brazil is, "See Rio and live."

More new industries. "Fomento" also means tanneries, shoe factories, paper mills, chemical works, glass factories, match factories, cold-storage plants, and, during World War II, millions of dollars were spent to build a new steel plant not far from Rio de Janeiro. Some 240 miles inland from this steel plant is a whole mountain of iron ore, some of the richest iron ore in the world and an enormous quantity of it. Near it is a great deposit of manganese ore. Some of the manganese ore and iron ore have been exported to the United States and to Europe, but the Brazilians hope to make much of their steel in this new plant. It will cost them more than if they bought the steel from the United States or Europe because the coal they use has to be brought a long distance from southern Brazil, and it is not very good coal.

Brazil has two troubles with her manufacturing. No petroleum has yet been produced, and the coal in the small coal field in the southern part of Brazil is of low quality.

Fortunately there are many other metals besides the iron and manganese. Brazil has the rare metal called beryllium. Beryllium is used in making steel flexible. Brazil has the only mine in the world that produces the rare gem, topaz. Brazil has industrial diamonds and the best quartz crystal in the world. This is very useful in building radios. The diamonds are dark in color and are not good for jewelry, but they are so very hard that they are used for cutting steel. Gold and many other minerals already have been found and are likely to be found elsewhere in the wide area of the Brazilian upland.

1. What is manganese ore? Use reference sources to help you with the answer.
2. Name six mine products of Brazil that will help develop the country.

Southern Brazil. The part of Brazil that lies east of the Paraná and Uruguay rivers and pushes southward toward Uruguay is a land of pine lumber, meat, and maté. Much of this corner of Brazil is covered with the forests of Paraná, tall pine trees, 4 to 6 feet in diameter. Here is a real lumber industry. It is as useful to the people of Brazil, Uruguay, and Argentina as the good yellow pine of our Southern States is to us. In some years Brazil's lumber exports are more valuable than her meat exports.

South and west of the pine forests are grasslands, such as are in parts of Texas. These are the home of the Gaucho, the hard-riding cowboy of southern Brazil, Uruguay, and nearby parts of Argentina. His job is to take care of the big herds of cattle that graze on the plains.

But after his day's work is done, the cowboy likes to play his guitar and sip maté as he sits at the door of his hut.

And what is maté? Maté is a drink as popular in Brazil, Uruguay, Paraguay, and Argentina as tea is with us. The leaves of the maté tree are dried and crushed. A couple of tablespoons of crushed leaves are tossed into a gourd, boiling water is poured on them, and the drink is ready.

Maté is a kind of "pep-er-upper" drink. A Gaucho can go a day or so without food, so long as he gets his maté. Brazil sends maté to other South American countries. Most of the plantations are in southern Brazil near the Paraná and Uruguay rivers.

Southern Brazil has several meat-packing and quick-freezing plants. It ships meat products to Europe through the seaports of Rio Grande do Sul and Pôrto Alegre.

1. Locate on a map the pine lumber, meat, and maté area of southern Brazil.
2. What states in our country are the same distance from the Equator as this area of Brazil?
3. Use the climate regions map to compare this region in Brazil and in the United States.

The Amazon Valley and the rubber business. The Amazon is the largest river in the world. It drains nearly $2\frac{1}{4}$ million square miles of Brazil. We might say that the Amazon Valley is a "has been" because it once supplied nearly all of the rubber in the world and now produces less than it did 30 or 40 years ago. In the past, the rubber tree has been the most important of all trees in this great forest. The trunk of the rubber tree contains a milky substance called latex. Rubber is made from latex.

When the Amazon Valley was the chief rubber producer, men hunted for rubber trees that grew wild in the forest.

Wild rubber trees grow far apart in the Amazon forests. On plantations the seedlings are planted close together, and workers can quickly collect the latex.

Black Star

When a rubber gatherer finds his tree, he cuts a gash like a V in the trunk. The latex begins to flow slowly from the gash. The man hangs a cup on the tree to catch the latex.

The next day he comes to the tree and empties the latex from the cup into a bucket. Then he makes another gash in the tree and places the cup to catch more latex. This he does every day for many days. He visits several trees daily and soon has enough latex to make some rubber.

The rubber gatherer builds a fire, usually of palm nuts that burn with a dense smoke. He dips a wooden paddle into the bucket of latex and holds the paddle in the smoke. This makes the latex harden into rubber. Again he dips the paddle and again he holds it in the smoke. Dip and smoke, dip and smoke—so he works until the ball of rubber that forms on the end of the paddle is about the size of a basket ball.

He puts the balls of rubber into his canoe and off he goes to Manáos or to some other riverbank trading place. There he trades rubber for food, clothing, tools, and other needed things.

Rubber trees grow wild in the Amazon forests, but they do not grow in groves. The trees stand far apart. The rubber gatherer must hunt for his trees and then cut a path from one tree to the next. This takes so much time that he cannot make a living unless he gets a good price for his rubber. So most of the rubber gatherers of the Amazon work at their jobs only when the price of rubber rises as it did during World War II. The plantations of rubber trees in the East Indies and southeastern Asia have almost destroyed the South American wild rubber business. On plantations the rubber trees stand close together in rows. Latex can be collected from them and made into rubber much more quickly and cheaply than from the wild trees of the forest.

If we fly over the lower Amazon Valley, we look down on forests as far as we can see ahead of us, and as far as we can see to the right and to the left. We fly on and the forest rolls on beneath us. We see that the river below us has many channels, winding in and out through the green forest. Forest is everywhere except here and there where we see a hut or two in a small clearing on the riverbank and a canoe turned upside down beside the hut. Once in a while we see a small sailboat, then a steamer going up the river to Manáos, or perhaps to Iquitos. The little city of Iquitos in Peru is as far from the Atlantic Ocean as Denver, Colorado, is from New York City.

Everywhere are forests and almost no people. The great Brazilian states of Amazonas and Pará take up most of the Brazilian part of the Amazon Valley. These two Brazilian states are about the size of our eleven Western States. Why is it that they have less than one person to the square mile? Let us examine the valley a bit more closely.

The rainy season comes. The Amazon rises. The river overflows its banks and washes mud out into the forest. This mud builds the banks of the river higher than the land back from the river. The flood water of the rainy season creeps through the forest, and as we look down from our plane, we see the sunlight shining back at us from the water. We see only the tops of trees sticking out above the water. In some places the river is a hundred miles wide in the rainy season. The only place one can travel is along the river and only here and there are the banks high enough to be above the flood.

C.I.A.A. from Ewing Galloway

A huge crate of smoked rubber is hoisted from an Amazon steamboat at Manáos. The rubber is being transferred to a ship for export to the United States.

Where would you settle if you were going to live in the Amazon Valley? If you settle anywhere near the river, you must settle on the riverbank at some spot that will be above high water, and sometimes such places are miles apart.

The dry land is far back, but it is hard to reach. It is not always rich land either, because the heavy tropic rains soak out the plant food and therefore crop plants may not grow well. You now know why this area has less than one person to the square mile.

Now you see why the city of Manáos is not a big city. It is the chief city of the Great Valley, but it really is one of the smaller cities of Brazil. Manáos may at one time have been the richest city of its size anywhere. Rubber sold for as much as $3.00 a pound in 1912. The automobile had made a sudden demand for rubber, and the plantations had not begun to produce much rubber. Then everything in Manáos was called grand—grand opera house, grand hotels, grand street car systems. But this good time did not last. Shiploads of rubber came to the United States and Europe from the plantations of the Malay Peninsula. The price of rubber at Manáos dropped to a few cents a pound.

Today the city is little more than a trading post for the Amazon Valley. The people of Manáos have been talking about hard times for many years. No great industry has come to take the place of rubber. The climate does not invite you. The swampy land produces

Frederic Lewis

Cattle from the campos of Brazil are herded in the stockyards in São Paulo.

millions and millions of mosquitoes and other unpleasant insects. At night the vampire bat will bite your toe or finger or nose or ear unless you are covered. The bite will not hurt, but the bat will drink your blood and that of your cattle. In the streams there is a fish that will bite a piece out of you as easily as you can bite an apple. You must take care of yourself scientifically if you live in the tropic lowland.

1. Why is there less rubber business in Brazil than in the East Indies and southeastern Asia?
2. Check the rainfall and temperature of a city in the Amazon Valley.
3. Would you like to live in this area? Why?

The Brazil nut. The forests of the Amazon Valley and the uplands along its edge have many useful trees. The giant Brazil nut tree grows wild in the Amazon forest. This tree may be 150 feet high and 6 to 10 feet in diameter at the ground. It produces nuts in a round pod that has a shell somewhat like the shell of a coconut. In the dry season the pod becomes ripe and falls to the ground. Men cut it open with a machete—a long swordlike knife. Twenty or thirty nuts come out of the shell. The nuts go to Manáos or Belém for shipment, chiefly to the United States and England. Perhaps you have eaten Brazil nuts. The Amazon Valley has room for millions more Brazil nut trees when the people of the world need the nuts and will buy them.

Babassú nuts. "Never heard of them," you say. Probably not. They are just another sample of the many useful products now growing wild in the Brazilian forests.

The babassú nut tree is a kind of palm. From the fiber of its leaves good bags, mats, baskets, and straw hats are made. The husk of the nut has fibers good for brushes, matting, and rope. The big oval nuts contain three to seven kernels. The shell of the nuts can be made into buttons, and the kernels yield oil for soap, margarine, or shortening, and also oil-cake or meal for fattening cattle. The Amazon Valley and the valleys of its branches could grow billions of babassú trees if we could use the dozens of useful things the tree gives. There are many other trees that may be useful when we make a scientific study of this forest region.

1. Name the kinds of nuts you have eaten. Try to find the names of the countries from which they come.

The campos. The western part of the Brazilian highlands is a large area called the campos. The campos is a grassland much like the llanos of Venezuela. Heavy rain falls here in the rainy season. It may rain almost every day for weeks at a time. The air is hot and damp. Dry stream beds are filled with water. Streams overflow their banks, much of the land may be flooded, grass grows and everything turns green. Then six months later, there is no rain for weeks at a time. The sunshine is hot. Everything that was green turns brown. Dry leaves fall from the trees. Streams dry up. Sometimes in the rainy season very little rain falls; then there are terrible droughts. In the Brazilian state of Ceará thousands of people have had to come to the coast town of Fortaleza, the state capital, and stay there for a year because the drought had made crop failure in the interior. Before the white man came to the campos, the Indians lived only along the streams where there were woods—nobody lived on the grassy uplands.

Today the campos is the land of large cattle ranches, but with less than one person to the square mile. Some of the ranches are hundreds of miles from a railroad station. The cattle must walk to market, driven by the Indian or Mestizo cowboy.

1. How many terms for grassland do you know?
2. Why are the campos so sparsely populated?

The future of Brazil. Brazil is still what we call a poor country. There are many resources which it has not yet used. It is an agricultural country, but cultivates less than half an acre per person. In the United States, we have about 2½ acres of crops per person.

(©) *Screen Traveler from Gendreau*

Rio de Janeiro is called the world's most beautiful city. This is one of Rio's new buildings.

The people of Brazil have made only a start at "fomento." If there is enough "fomento," Brazil may easily become the comfortable home for many more people than it now has.

The United States has 3½ times as many people as Brazil, but our post office carries more than 16 times as many pieces of first-class mail. Brazil has much room for continued progress in many ways, and much need of it.

We in the United States will certainly keep on buying Brazilian coffee and cacao, her manganese ore, and her iron ore. As our Upper Lake iron mines run out of good ore, you may see more and more ships bringing loads of Brazil's mountain of iron ore to our ports for our furnaces. We have been importing some of it for years.

1. Is Brazil a rich country? Explain your answer.
2. Do you think the future outlook for Brazil is bright? Discuss.

Something to Do

1. Draw or use an outline map of Brazil. Mark the following to help you with your South American place geography:
   - Equator
   - Amazon
   - Belém
   - Fortaleza
   - Recife
   - Natal
   - São Salvador
   - Rio de Janeiro
   - São Paulo
   - Santos
   - Manáos
   - Uruguay River
2. The large coffee plantations in Brazil are called "fazendas." Tell the story of their development.
3. List three factors which make the plateau of southeastern Brazil ideal for the production of coffee.
4. Why did the people of Brazil adopt the slogan "Fomento!"? How did they apply its meaning for their own good?
5. Give reasons why the United States buys much of Brazil's coffee but little of her cotton.
6. Sometimes word meanings are more interesting if we know the origin, that is, from where the words come. Look for these words in a reference source to find their origin and meanings:
   - a. cacao
   - b. latex
   - c. fazenda
   - d. llano
   - e. coffee
   - f. Amazon
   - g. machete
   - h. campos
7. Discuss these topics with your classmates:
   - a. Crops do not grow well where there is very heavy rainfall.
   - b. The Amazon Valley is sparsely populated.
   - c. São Paulo is a manufacturing and transportation center.
   - d. Coffee growing in Brazil presents some problems.
   - e. The location of Recife has several advantages.
8. Look for pictures and information on unusual animals and insects of the Amazon Valley.
9. Write a paragraph on the products of the Amazon Valley forests.
10. Name five natural conditions that would make it difficult for a man from the United States to gather latex and prepare rubber in the Amazon jungle.
11. Perhaps you would like to find how long it would take you to go by plane from your city to Rio de Janeiro. Or perhaps you would prefer to go by boat. Ask your teacher to help you secure the information through an air line, a steamship line, or a travel bureau.
12. Plan a trip by plane or boat to Rio de Janeiro. Decide what kind of clothes you would take. Tell what you would expect to see on your trip and what you would find in Rio.
13. Choose one of the natural divisions of Brazil on which to prepare a talk for the class. List the points you will include in your talk.

A Short Quiz

Copy the sentences; fill the blanks with these words and phrases. You will not use all of the words.

- Manáos
- coal
- São Paulo
- topaz
- llaneros
- capital
- maté
- harbor
- Serra do Mar
- cacao
- quartz
- Santos
- Gaucho
- campos
- petroleum

1. Rio de Janeiro is the ______ and largest city in Brazil.
2. The city of ______, known as the world's coffeepot, is the business center of Brazil.
3. ______ is the funnel city for São Paulo.
4. Streams in the ______ were harnessed to provide power for industries in São Paulo.
5. Manufacturing in Brazil is retarded because of lack of good ______ and ______.
6. Crystals of ______ are used in building radios.
7. The cowboy of southern Brazil is called a ______.
8. Brazilians drink much ______ and sell some to other South American countries.
9. The chief city of the Amazon Valley is ______.
10. The grassland of Brazil is called the ______.

Three Lions

Just like a Texas cowboy, an Argentine herder works from horseback. This worker on an estancia near the city of Mar del Plata shows how to throw the lasso.

Chapter 39

Argentina — Uruguay — Paraguay

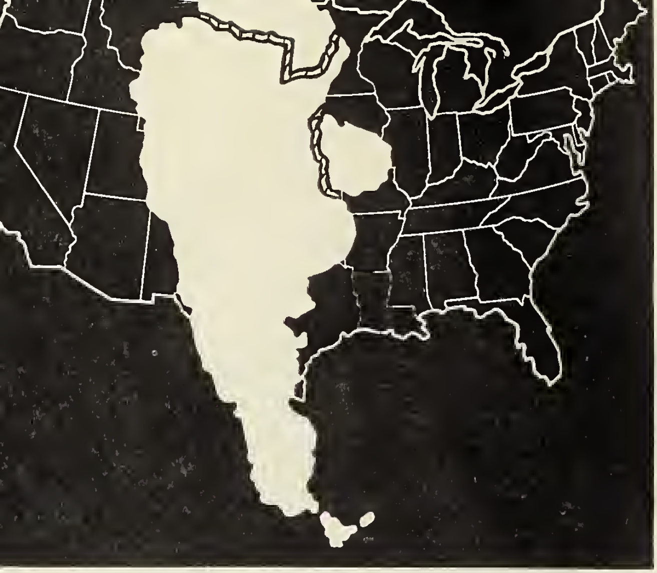
The River Plata countries. There is a hush in the schoolroom as Miss Clarke lowers the shades and prepares to show maps. A map of South America flashes on the screen. All the countries are in outline except Argentina, Uruguay, and Paraguay. These three are painted black.

"These three countries," Miss Clarke tells the class, "are sometimes called the River Plata countries. They have the Rio de la Plata, or Plata River, for their main ship road to the sea.

"Sebastian Cabot sailed up this broad stream of the Plata River in 1526. The Indians whom he met gave him presents made of silver. So Cabot thought he had found another treasure chest as rich as Peru. He named the river Rio de la Plata—river of silver."

Land pattern. A second map appears on the screen. The map shows the land pattern of the River Plata countries. It is a physical map.

"Notice the Andes," continues the teacher. "These high mountains stand along the western rim of Argentina; they have Aconcagua, 23,081 feet, tallest mountain in the western world, and



Use this map to discuss Argentina's land and weather variations.

hundreds of other peaks that tower 2 miles or even more above the sea.

"Most of the land east of the Andes Mountains slopes so gently to the Atlantic that it appears to be almost flat. There is one break in this flatness—the tall Sierra de Córdoba, or Córdoba Mountains, that rise up a mile or more almost straight from the plains of central Argentina.

"The Córdoba Mountains are a popular summer resort of Argentina. They have summer weather many degrees cooler than the nearby lowlands. They have forests good for camping and hunting; they have streams for fishing; and a big lake of warm salt water for bathing and other water sports.

"Argentina makes us think that most of the land in the world is not very good for growing crops," says Miss Clarke. "No large country has even so much as half its land good enough to be called first class. You will find that the United States has a larger share of good land than has Canada, or Brazil, or Russia, or Australia, or Argentina. But one part of Argentina is very good land indeed.

"That best part is called the pampas. Pampas was the Indian's name for plains.

"These plains are flat, almost like a table. They have a deep, fertile, dark-colored soil like the better lands of our United States Corn Belt. Pampas temperature in summer may go to 90° or above. The winters are mild. There is rain enough for grass and grain in the eastern part almost to the foothills of the Córdoba Mountains."

1. Draw or use an outline map of South America to show the kinds of land in Argentina, Uruguay, and Paraguay. Use different colors as on a relief map to show the mountains, the slopes, and the plains. Put in the Plata River, and label Aconcagua and the Córdoba Mountains. Put in the Falkland Islands.

Argentina

Cattle come to the pampas. "Some of the first Spanish explorers and settlers in Argentina brought cattle with them. Some of the animals escaped and ran wild on the grasslands. The animals increased in number very rapidly. Every so often, Gauchos had a round-up, killed as many wild cattle as they wanted, and sold the hides to the tanner and the tallow to the soap maker. They sun-dried some of the meat and sold it as tasajo or jerked beef. This kind of beef does not taste very good," says Miss Clarke, "but it will keep for months. In hot countries like Brazil and Guiana jerked beef is often the only kind of meat that can be bought.

"Then came the refrigerator ship. Argentina sent fresh beef in refrigerator ships to England and other countries of Europe.

" 'We don't like this beef,' said the English people. 'We will not buy it.' The meat was tough because the cattle ran about as wild cattle. They never got fat enough to make good beef.

"The Argentinians had to do something about that," continues Miss Clarke. "So they brought the very finest kinds of beef cattle from Europe and the United States to live on the pampas. They put fences around the pastures. They planted alfalfa and corn for food to fatten the cattle. That began years ago. Now the Argentine cattle are among the finest in the world. Argentina has at least twice as many cattle as people, and three times as many sheep."

1. Why and how did Argentina improve the production of meat?
2. Which country produces the best cattle for meat—Brazil, Venezuela, Argentina?

The estancias. The children were told that Argentine cattle live mostly on big ranches called estancias. Each estancia has its big house for the owner, and smaller houses for the manager and Gauchos. The ranches have wire fences, windmills, and water troughs like those on our ranches in Texas and our Western States.

The people of Argentina boast that some estancias are "twenty miles from the front porch to the front gate." That is only a way of saying the estancias are big. The kings of Spain gave the South American land away in large tracts just as the kings of Portugal did. Some Argentine estancias have hundreds of workers, a ranch village, with stores and repair shops, a church, and a school.

The estancias on the pampas have land that is good for crops, as well as pasture land for cattle. By far the most important farm crop is alfalfa—a splendid food for cattle. Then next in importance are corn and wheat, and flaxseed for linseed oil. These crops are grown with the help of machines, the same way as in the United States. We send much machinery to Argentina. American manufacturers have great warehouses in Buenos Aires where spare parts of machines are kept until they are wanted.

Miss Clarke shows a chart on the screen. The chart shows Argentina as a world leader in many products. "The Argentine pampas," says she, "are probably the richest of grain and cattle lands.

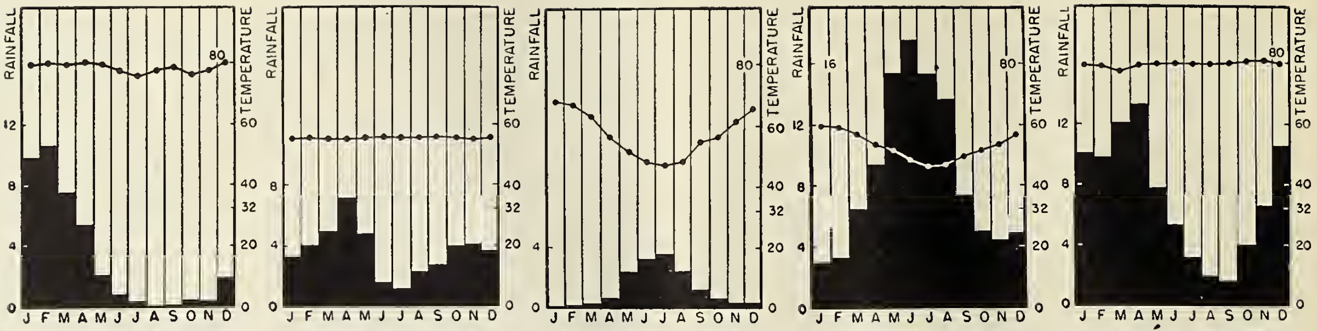
"The land between Buenos Aires and the Andes is much like the land between the Mississippi River at the southeastern corner of Iowa and the Rocky Mountains. First is a corn belt, then a wheat belt, then ranches on land too dry for farms, and then irrigated valleys at the foot of the mountains.

"The good farm land of Argentina does not extend much farther south than the port of Bahía Blanca, a wheat port, but the dry land of ranches extends on southward to the Strait of Magellan and the island of Tierra del Fuego."

1. Locate Bahía Blanca; Tierra del Fuego.
2. Compare the extent of the ranch lands with the wheat belt.

Patagonia. "The part of Argentina east of the Andes and south of the Rio Negro is called Patagonia." Everyone looks at the map to find the names of these places. "Nearly everybody has a bad word for Patagonia," says Miss Clarke. "They talk about the fury of the winds that howl across the plains. They say the surface of the country has been blown down to bare rock, pebbles, and sand, with only a few thorny bushes here and there. And the weather is unpleasant—bitter cold in winter and dusty dry in summer.

"All these complaints are partly true," says Miss Clarke, "but I will say three



GUAYAQUIL, ECUADOR QUITO, ECUADOR SANTIAGO, CHILE VALDIVIA, CHILE MANÁOS, BRAZIL

Locate each of these cities on a physical map. How does their location help explain the rainfall and temperature? Write your explanation for the differences between Santiago and Valdivia.

good things about Patagonia. Most of it has enough rain for grass. A very large part of the 45 to 50 million sheep in Argentina live on the Patagonian plains and eat grass there.

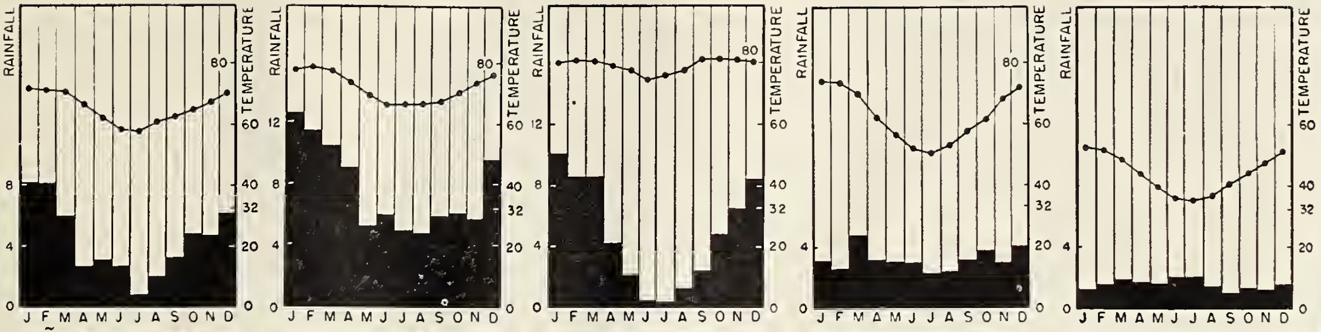
"Patagonia has about one person to the square mile, but there are small towns along the coast where meat-packing plants prepare frozen mutton for the European market. Ships for Europe load with meat and wool at these small ports.

"Argentina produces more than half of all the petroleum it uses, and some of the wells are in Patagonia near the town of Comodoro Rivadavia. And so," continues Miss Clarke, "if you do not like the weather, think about grass, meat-packing plants, and petroleum, and their value to the people."

The class looks at the Falkland Islands off the coast of Patagonia, and Miss Clarke shows pictures of the life there. The islands are a colony of the British family of nations. Many of the sheep ranchers of Patagonia are from the Falkland Islands. These islands are so windy that trees cannot grow, but there is good grass for sheep farms and they provide an export of wool. But the big job of the Falklands is catching whales and making whale oil.

1. Find on your map a place at the eastern base of the Rocky Mountains between 40° and 50° north latitude. Now find a place at the eastern bases of the Andes Mountains between 40° and 50° south latitude. Compare the climate and crops of the two places.

The Andean foothills. You remember that the United States and Canada have large national parks in this part of the Rocky Mountains. Argentina also has the Nahuel Huapí National Park. It is in what they call the Lake District. This part of Argentina has a hundred or more small mountain lakes of beautiful clear blue water. Snow-capped mountains rise above the lakes, and dense forests stand on their shores. The scenery, which is very beautiful, is somewhat like that of the Lake Louise country of Canada and Glacier National Park of Montana. There is now a railroad from Bahía Blanca to the Argentine Lake District. Argentine travelers go there just as American travelers go to national parks in our Rocky Mountain country. This railroad now carries to Buenos Aires carloads of apples. Orchards in the irrigated valley of the Negro River near the Andes grow apples of the same varieties that we grow in the valleys at the foot of the Cascades in Washington State. The trees came from the United States.



SÃO PAULO, BRAZIL SANTOS, BRAZIL CUYABA, BRAZIL BUENOS AIRES, ARG. PUNTA ARENAS, CHILE

Compare these graphs with the northeastern United States graphs. Why are the curves of the temperature lines in the two sets of graphs reversed? Explain the rainfall differences in Santos and Punta Arenas.

Farther north the climate is warmer. At Mendoza and San Juan streams flow down from the snow fields of the Andes into valleys where the climate is much like that of California. Here are thousands of acres of vineyards, orange groves, and peach orchards. In these valleys in the neighborhood of Mendoza are 1500 wineries—places where wine is made from grapes grown nearby.

The city of Mendoza has factories for packing, drying, and quick-freezing of fruit. Express trains hurry this fruit to Buenos Aires and the other cities of the east, and some comes to the United States in refrigerator ships. The fruit arrives here just after the Argentine harvest, which comes in March and April.

Still farther north, other Andean mountain streams come down to the Argentine city of Tucumán. Tucumán has a million acres of sugar cane. This area produces the sugar that is needed for the fourteen million people of Argentina. Several railroads connect the rich fields of Tucumán with the pampas.

1. Find a place in North America that is the same distance from the Equator as Tucumán, Argentina. What kinds of crops are grown in these places?
2. What months are the harvest months for oranges, peaches, and grapes in California?
3. Why do we buy fruit from Argentina?

The Gran Chaco. The Gran Chaco is the name given to the land between the Andes Mountains and the Paraná and Paraguay rivers. A lot of it belongs to Argentina, nearly 100,000 square miles to Paraguay, and some to Bolivia. This is a warm land, with a rainy season and a dry season. The Gran Chaco is flat land. It is so flat that during the rainy season much of the land is flooded; during the dry season some of the water remains to form swamps and salt marshes. Then there are clouds of mosquitoes. You must sleep under mosquito netting.

Some parts of the Gran Chaco are covered by a mat of thorny bushes about as high as a man's shoulders. Nothing can eat the bushes, and no man can get through them without a great deal of chopping. Some parts of the Gran Chaco have forests. Other parts have some good grass and some cattle ranches, but there are very few people in this part of Argentina.

In recent years a part of the Argentine Chaco near the Andes has become valuable because of the discovery of petroleum.

Ewing Galloway

The street Paseo Colon in Buenos Aires is named in honor of Columbus. Trees line many of the broad avenues, but some sections have narrow streets where only one-way traffic is allowed.

Buenos Aires and other cities. The people of Argentina say about their capital, "When Buenos Aires has a cold, the whole republic sneezes." They want everybody to know that this "City of Good Air" is the center of just about everything in their country.

One of every four persons in Argentina lives either in Buenos Aires or its suburbs. This beautiful city is the largest metropolis in South America. In the number of its people, Buenos Aires is ahead of any American city except New York and Chicago. Except for New York, Buenos Aires is the busiest seaport in the western world.

It might be called the Washington, the New York, and the Chicago of Argentina. Most of the people who are employed by the government work in offices in this city. Most of the goods that Argentina buys from other countries and sells to other countries pass through Buenos Aires. The city does most of the manufacturing in Argentina. It is a great railroad center and a great meat-packing center, with the largest meat-packing plant in the world. This one plant in Buenos Aires can make ready for shipment 5,000 cattle and 10,000 sheep each working day.

As you go from Buenos Aires to Rosario on a summer day, you seem to be riding through a sea of corn. Ocean steamers come up to Rosario to load corn, wheat, and meat. Rosario is as large as New Orleans. Farther up the great Paraná is Santa Fé, another river

Ewing Galloway

The port of Buenos Aires is entirely man-made. There are five ports or units which have interlocking basins and docks. Buenos Aires ranks next to New York in foreign trade.

port with as many people as has Salt Lake City. The flax fields around Santa Fé make Argentina by far the largest producer of linseed oil.

The inland city of Córdoba at the base of the Córdoba Mountains has as many people as has Denver, Colorado.

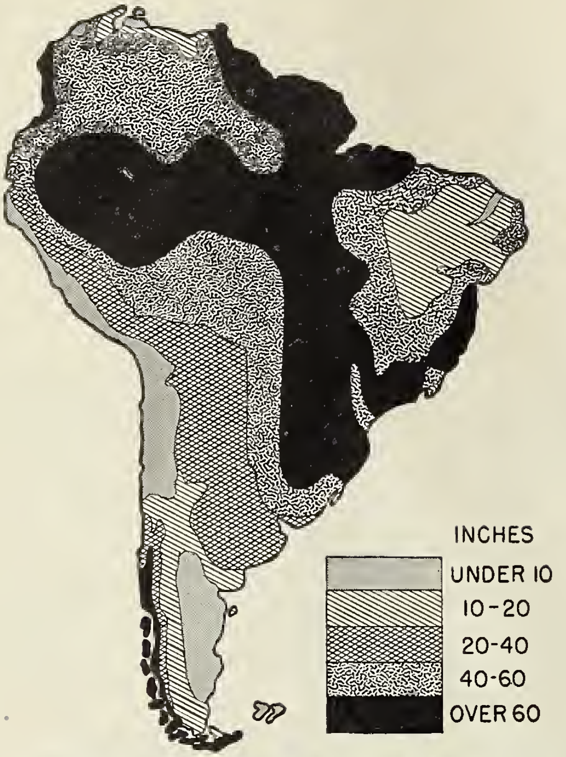
1. Why can Buenos Aires be called the New York, Chicago, and Washington of South America? Give the reasons.

"Mr. Argentina" speaks. Miss Clarke tells the class this story: "One day a man in Buenos Aires said to me, 'I drive an American automobile. I go to see movies made in Hollywood. I wear an English suit of clothes, a French necktie, a Japanese silk shirt. I have a German camera, a Swiss watch, a British pipe, and I heat my house with coal from Britain. We Argentines buy these things, and many others that I did not mention, from countries across the seas. We pay for the goods with Argentine beef and mutton, wool, wheat, corn, hides, and linseed oil. But we are making in our own factories more and more of the things we need. We have no good coal, but we have discovered oil in the Chaco and in Patagonia, and that is a great help to our industries. We are going forward.' "

1. Discuss the future of Argentina. Do you think it is a bright future? Why?

Uruguay

A little nation at the crossroads. The class is interested in Miss Clarke's story



Compare average rainfall in South America with North America's rainfall. Point out areas of desert, farm lands, and forests.

of Uruguay. "The map," she says, "shows little Uruguay, wedged between its big neighbors, Brazil and Argentina. Uruguay is the smallest country in South America. It is a little smaller than Kansas, but it has more people. Many of them are Spaniards and Italians who have come to Uruguay since 1900.

"Uruguay is a crossroads country. It stands on the eastern shore of South America, where La Plata River opens a wide, deep-flowing road into the heart of South America. There is water on three sides of Uruguay deep enough to float ships that carry passengers and freight."

1. Explain the statement—"Uruguay is a crossroads country."

Land pattern and weather. The children learn that the shores along La Plata and the Atlantic have broad, sandy beaches and back bays, like New Jersey. Many summer resorts are near Montevideo. The northeastern part of the country has hills like southern Brazil, but most of the land is much like the pampas, with grass and trees along the streams.

June, the coldest month, seldom has freezing weather. January, the warmest month, usually has weather much like that of our South Atlantic States. The rainfall of 35 to 40 inches is much like that of Virginia.

Ranches, not farms. "What a country for farms," you say. Yes, Uruguay is almost perfect for farms. But only about one-tenth of the land is used for crops. The farms grow enough wheat to feed the people; also some corn to fatten the cattle and some flaxseed for linseed oil. There are orchards to supply fruit and dairy cows to give the city people milk.

You may think of little Uruguay as being a big ranch that has four head of cattle and ten sheep for every person in the country. Grass grows as tall as a man. Little Uruguay has some of the best grazing land on earth.

Meat for butcher shops. Uruguay, for its size, is the world's leading butcher shop. Fly over the country and you see droves of cattle and sheep grazing on the ranches or going to packing plants. The cattle become beef; the sheep become mutton. The meat, chilled or frozen, keeps fresh in refrigerator ships on its long journey through the Tropics to England and other countries in Europe.

Uruguay wool, sheepskins, and hides are bought chiefly by the United States. Wool brings in 45% of the money that Uruguay receives for products sold to other countries. Hides and skins bring in 25%; beef and mutton, 20%; linseed oil, 5%.

(©) *Screen Traveler from Gendreau*

Fat sheep with thick fleece are proof of Uruguay's good grazing land.

Montevideo, the capital city, has as many people as San Francisco. The city does for Uruguay what Buenos Aires does for Argentina.

1. What states in our country have the same latitudes as Uruguay and Paraguay?
2. What kind of winter weather do our states of the same latitude as Uruguay have?

Paraguay

Inland, but not landlocked. Miss Clarke shows a map of Paraguay. "So often," says she, "you read about 'landlocked Paraguay in the heart of South America.' This is a mistake because the Paraná River is broad and deep enough for river steamers to come up to Asunción, the capital. Smaller boats go on far into Brazil in the rainy season.

"Asunción is about 1,000 miles up river from Buenos Aires. River boats make the trip in four days, trains in two days, and planes in four hours or less. Paraguay is an inland country, but it is not landlocked," says Miss Clarke.

The land between two rivers. As the class looks at the map to find "the land between the two rivers," the teacher continues her story. "Southern Paraguay, the land between the Paraguay and the Paraná rivers, is rolling and parklike. Thick forests clothe the hillsides. The valleys have been cleared for farms and ranches. The land on the west bank is the Gran Chaco.

"Paraguay has weather much like southern Florida, with about 52 inches of rain at Asunción. This is good for cotton, tobacco, maté, and oranges—the four chief farm crops of the country.

"Oranges seem to grow everywhere in Paraguay east of the 'big river' and the fruit is delicious. Many oranges go down river to Buenos Aires and Rosario. Paraguay also produces most of the world's petit-grain oil. This oil is made from the leaves of the bitter orange tree and is used in perfumes.

"The part of Paraguay east of the Paraná River is nearly as large as Louisiana. The Gran Chaco part west of the river is twice as big as Louisiana, but the whole of Paraguay has only half as many people as has Louisiana.

"Paraguaians speak Spanish, but many are Mestizos and some are Indians.

"They are not so much interested in 'fomento' as are the people at São Paulo."

The class says Miss Clarke has given everyone a fine trip. Everyone has learned many interesting things about the three Plata countries.

1. Check a map to see the division of the country by the Paraguay River.
2. Name the four chief farm products.
3. The chief product of the Gran Chaco in Paraguay is quebracho, a kind of wood used in tanning hides. Add the word "quebracho" to your vocabulary.

Something to Do

1. Discuss with your classmates the trade between the United States and Argentina. What products do we get in exchange for farm machinery?
2. Complete the following sentences. Check your work and rewrite any statements in which you have errors.
   a. More alfalfa than corn and wheat is grown on the pampas because—
   b. Patagonia can export meat, wool, and petroleum because—
   c. The United States imports fruits from Argentina because—
   d. The Buenos Aires area became the chief manufacturing region because—
   e. The Gran Chaco has few cattle, but it is the chief source of cotton because—
   f. There is little manufacturing in Uruguay because—
   g. Paraguay is an inland country but it is not landlocked because—
3. Buenos Aires has a man-made harbor. Give the reasons for its development.
4. Prove this statement: The pampas have surface, soil, and climate suited to agriculture and cattle raising.
5. During what months is winter wheat planted in Argentina? in our North Central States? Why?
6. Which country has the better opportunity to be the leader in South America—Argentina or Brazil? Your teacher may want to hear a debate on this question. Gather all the information you can on the country you select. Prepare an outline to follow while giving your talk. Debates are an excellent way to learn about a topic.
7. Compare the size of Uruguay with our states. Why is the population sparse?
8. Prove that Uruguay is the big butcher shop of the world. Do you know of any other country that depends so much on one crop or industry?
9. Paraguay has no geographical barriers to development. Discuss the ways in which the country could become important.
10. Add pictures to your scrapbook or make a picture poster on the countries of Argentina, Uruguay, and Paraguay.

A Short Quiz

Identify the following by writing the name that fits each description:

1. wind-swept plains of southern Argentina—
2. fertile land, good for crops and pasture—
3. large ranches on the pampas—
4. a source of whale oil—
5. center of fruit-growing area in Argentina—
6. warm, flat land, mostly covered with swamps, thorny bushes, and forests—
7. metropolis and capital city of Argentina—
8. chief use of flaxseed—
9. zone in which Argentina lies—
10. smallest country in South America—
11. capital city of Uruguay—
12. forest product used in tanning hides—

Lanks from Paul's Photos

High on the mountains in Peru, the Pan-American Highway signs point to Arequipa and to Lima. There are crossroads even in the desert.

Chapter 40

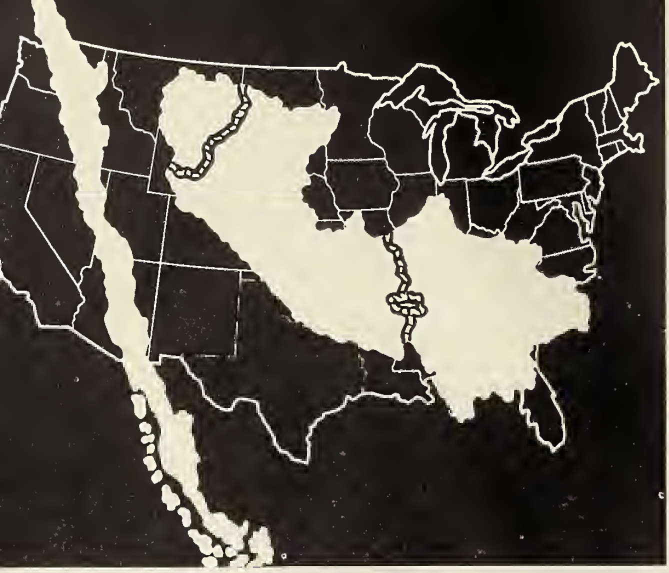
Ecuador — Peru — Bolivia — Chile

West coast neighbors. "All ashore that's going ashore!" blares the voice through a loud speaker on a great ocean steamship that lies beside a New York pier. Visitors say good-by to friends on the ship and go down the gangplank to the pier. The passengers crowd to the rails of the ship and wave handkerchiefs and call good-by to the crowd on the pier.

"Boo-oo-oo! Boo-oo-oo!" goes the ship's whistle with a deep, low sound that shakes the air. Tugboats puff as they slowly pull the big liner out of her dock.

The ship quivers a bit as her propellers begin to turn slowly. Then, "G-r-r-h! G-r-r-h!" The engines have started. The ship that will carry us to the west coast of South America is headed toward the sea.

Night and day the ship plows the Atlantic. Night and day the engines run without stopping. It is March now, but the weather will soon get warm. On the third day, the captain and his officers appear in their "whites." Ships' officers nearly always wear white uniforms in the warm parts of the world.



Chile, Ecuador, Peru, and Bolivia—four neighbors—are a small part of South America. But they would cover a large part of our country.

The ship crosses the Caribbean Sea, passes through the Panama Canal, and steams southward through the Pacific. We shall visit four countries—Ecuador, Peru, landlocked Bolivia, and Chile. We know that the northern coast of Colombia near the Isthmus of Panama is one of the wettest hot forests in the world. Few people live there. We pass it by without stopping.

1. Follow on a map the ship's route from New York to Guayaquil, Ecuador. Write the names of four water bodies on which the ship travels.
2. Explain why the ship's crew wear white uniforms in the month of March.

Guayaquil. Our first port of call is Guayaquil, Ecuador.

"Have you seen our chocolate-covered streets?" asks a friend in Guayaquil. We have not. Nor do we intend to let him play a joke on us. Does he think we do not know the steamy hot Guayaquil weather would cause chocolate to flow like molasses? We will not be silly!

We turn a corner. There before our eyes is a street covered with cacao beans! Some men are walking with bare feet in the "street of beans." They are tossing and turning over the cacao beans so that the sun can dry them. Other men are shoveling the dried beans into bags to be hauled to the warehouse near the docks. Cacao is the most valuable product Ecuador has to sell. Most of it comes to the United States.

Guayaquil is Ecuador's largest city and busiest port. It is 30 miles up the Guayas River from the Gulf of Guayaquil. This gulf, which looks so small on the maps, is really wider than the State of New Jersey and more than half as long.

A hot, wet coast. A coastal plain of Ecuador, 100 miles or more wide, stretches north and south from Guayaquil. The plain is crossed by the Equator. That means hot weather, 80° or 90° every day in the whole year. Here is a wet season with rain almost every day, and a dry season when there is much less rain.

Thick forests cover most of the coastal strip. The cleared lands, especially along the Guayas River, have plantations of cacao and bananas, and fields of rice, sugar, and pineapples. The most interesting products of this hot, low country, however, are tagua nuts and balsa wood. Steamboats travel the Guayas River and its branches for a distance of 200 miles to carry produce to Guayaquil.

1. What kind of climate is necessary for the growing of cacao and bananas?
2. Name the areas of the Western Hemisphere that produce either or both of these crops.

Ecuador "buttons the world." The tagua palm grows wild in the hot, rainy forests of Ecuador. The seeds or nuts of this tree are so hard they are called vegetable ivory. Most of the seeds are used for buttons, but some are used for umbrella handles, chessmen, and dozens of other small carvings. Ecuador stands first among the countries of the world in the export of tagua nuts.

Balsa and petroleum. That toy airplane you put together and flew by a stretched rubber band attached to the propeller was made no doubt of balsa wood. This wood is only half as heavy as cork, and it is half as strong as spruce. Balsa wood is used in life preservers and airplanes and for stuffing between the walls of a refrigerator to keep the cold in and the heat out. Balsa has dozens of other uses, and Ecuador supplies almost all that is used in the world.

The coastal plain of Ecuador, west of Guayaquil, also produces oil enough for the needs of the country and some for export to other countries.

Climbing! We go by train from Guayaquil to Quito, capital of Ecuador. The trip takes a day. And what a trip! The engine climbs up two miles in one stretch of fifty miles. The train goes zigzag up the mountain wall and crosses 88 bridges and goes through 3 tunnels.

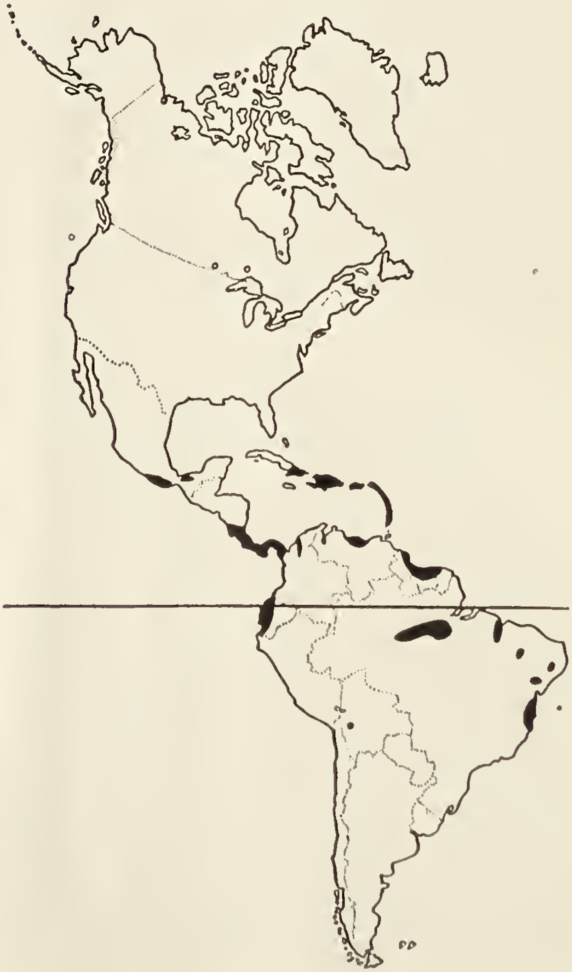
It crosses the first ridge of the Andes at 11,841 feet. We now see the shining white top of Mt. Chimborazo, 20,702 feet; Mt. Cotopaxi, 19,498 feet; and dozens of other snow-capped peaks in the two ranges of the Andes.

High up between the two high mountain ranges are pockets of nearly level land. The weather is cool. You would say "chilly." The temperature may rise to 70° at midday, but falls rapidly as the sun goes down, and at night you will button your overcoat and wish for a fire.

The farms in the mountain valleys between the ranges look like huge patchwork quilts of green and yellow. The

Ewing Galloway

Cacao is a tropical climate plant. When first picked and hulled, cacao beans are soft and white. The map below shows cacao-producing areas.



farms have orchards of apples, pears, and cherries, and fields of wheat, corn, barley, and potatoes. These are the crops of southern Canada. Three out of every four persons in Ecuador live in these mountain pockets of level land. But they have only a small part of Ecuador's land.

Quito lies in a pocket of land among high mountains. The city is a center for Panama hats, which are woven chiefly in the homes of the people, not in factories. Making hats is the largest manufacturing business in Ecuador.

Ecuador grows the tarquilla palm in the eastern lowland. Its fan-shaped leaves have thread-like fibers, tough and strong. A weaver can make a hat to sell for a dollar or two by working several days. Or he may work several months making a fine hat that will sell for two hundred dollars or more. Most of the Panama hats worn in the United States come from Ecuador.

1. Make a diagram to show the crops grown on the different elevations—coastal plain and mountain valleys.

Ecuador east of the Andes. The Andes drop steeply to the Amazon Valley. As you go down the east slope into this land of rain, the forest is so thick that you cannot see as far as the width of your schoolroom. The Ecuador part of this Amazon lowland is another of those "hard-to-get-to" back countries you read about in Colombia and in Brazil. This jungle land is hot all the time and wet most of the time. It has wild rubber and valuable hardwood trees. It has wild cinchona for quinine, kapok for life preservers, and dozens of other useful products. But this jungle has few people. Some parts have no people at all. It is a part of the forest land that "waits."

The Galapagos Islands. These islands lie on both sides of the Equator about 700 miles west of Ecuador. The name means "turtle islands." Crowds of big turtles live there. Ecuador permits the United States to have on the islands a base for its fleet. Sailors and airmen, ships and planes stand ready to protect the Pacific entrance to the Panama Canal.

Ecuador is a land where mountains and hot wet forest make it hard for man to work. Only one Ecuadorean in twelve is of European descent. Three in twelve are Indians and six in twelve are Mestizos. There are a few Negroes and mulattoes. The climate does not suit Europeans very well. Ecuador has many resources that man has not yet used.

1. How do you think science and inventions can help Ecuador? Think of her resources, location, and climate in discussing this question.

Peru

The "land of never wet." We fly from Guayaquil to Lima, Peru. Our plane follows the coast. In half an hour after we cross the border we can scarcely believe our eyes. Gone are the dark forests and green fields of Ecuador. This low, flat country between the Andes and the sea is now a waterless waste. Here and there a stream flows down from the Andes, but between their narrow valleys we see only sand dunes or bare earth.

This "land of never wet" extends along the coast of Peru and into northern Chile. The weather is warm the year round. The days are flooded with blinding sunlight or are gray with thick fog that rolls in from the Pacific. Some of the boys and girls who live on this coastal plane have never seen a rainstorm. They do not know the fun of walking in the rain.

Oil in the "land of never wet." Peru bulges into the Pacific just south of the Gulf of Guayaquil. Our airplane crossed this bulge. Possibly you noticed oil derricks scattered among the sand dunes, and the clusters of oil storage tanks, and the tankers loading at the docks of a small city on the coast. About fifteen million barrels of oil a year come from this north coast. Oil brings about one-fourth of all the money that Peru gets for the sale of its products to other countries.

The Humboldt Current. What causes this desert by the sea? The cause is the Humboldt Current. This is a river of cool water that flows in the ocean along the west coast of South America. It carries water from the cool south toward the Equator near South America just as the Labrador Current does near North America.

This Humboldt Current brings cool water to all of western South America, south of the most western point of Peru. Winds blow from the cool current to the warm land. Such winds bring dry weather almost all the time.

1. Trace the Humboldt and Labrador currents on the climate regions map.
2. Review your understanding of the effects of these currents. You may want to read again about the Labrador Current.

The desert blossoms. On we fly. As we look down we see broad bands of white or yellow, narrow bands of green, and towns along the coast. "How do the people make a living?" we ask the pilot.

"The bands of white and yellow," he replies, "are shifting sand. The bands of green are irrigated farms along the rivers.

"Streams fed by melting snows in the Andes flow down to join the Pacific. The people of Peru dam these streams and lead the water to their fields in the narrow valleys in the sandy desert."

Grace Line

Peruvian women pause near the ruins of a city.

With the help of this water, this Peruvian "land of never wet" produces more than half the food eaten in the country and both cotton and sugar for export. The farmers grow cotton, sugar cane, flax, rice, corn, and other warm-land crops.

The guano islands. The cool Humboldt Current is alive with fish—mostly little fish—anchovies, young herring, and silversides. Mr. Big Fish comes swimming deep in the current. He feeds on the little fish and drives them to the surface.

Millions of birds catch the little fish that come to the surface. One bird had 76 anchovies in its craw when it was caught. Stuffed with food, the birds must have a place to nest. They find homes on 43 small islands, including the Chincha Islands, along the coast of Peru. The islands are rainless, waterless, grassless, and foodless. Best of all for the birds, the islands are manless and foxless.

The birds crowd these islands almost as close together as sardines in a can. Their waste matter and the bodies of those that die form thick beds called guano—a very good kind of fertilizer. Guano contains nitrogen. More than a billion dollars worth of this plant food has been sold from these small islands. Years ago guano went to Europe, but chemists have learned how to take nitrogen for fertilizer from the air. So Peru, nowadays, protects the birds and uses the guano for its own crops. The guano crop is more than 50,000 tons a year.

Lima and Callao. We land at the airport of Lima, the capital of Peru. The city is less than 8 miles from its seaport, Callao. The two cities, connected by railways and highways, are really one community.

Ocean ships lie safely at the docks of Callao protected from the waves of the open sea by a breakwater. The ships bring machinery, automobiles, woven goods, chemicals, dyes, and many food products. They carry away cotton, sugar, and copper and other minerals, and wool and skins from the plateau. Sometimes a little rubber comes over the mountains from the eastern forests. More than half the goods Peru buys and sells passes through Callao and Lima.

1. What do the imports of Peru tell you about manufacturing in that country?

Again we climb. We thought the railroad from Guayaquil to Quito was steep. But the road from Lima into the Andes is one of the wonders of the world.

We pull out of Lima in a fog about as thick as pea soup. Our train runs through farms of sugar cane and cotton, then begins to zigzag up the wall of the Andes. It crosses 51 bridges, goes through 68 tunnels, shifts back and forth on 28 switchbacks, and climbs up 3 miles in a distance of 106 miles. Then we stop at the world's highest railroad station, 15,673 feet above the sea.

The Peruvian Andes. The train takes us on to Cerro de Pasco, a city on a plateau about as high as Mt. Whitney. Snow-topped peaks form a kind of tall mountain fence on either side.

The weather chills us to the bone. We breathe in deep gulps but never get enough of the thin mountain air. And as for playing tag or having a race, we would be out of breath almost from the start.

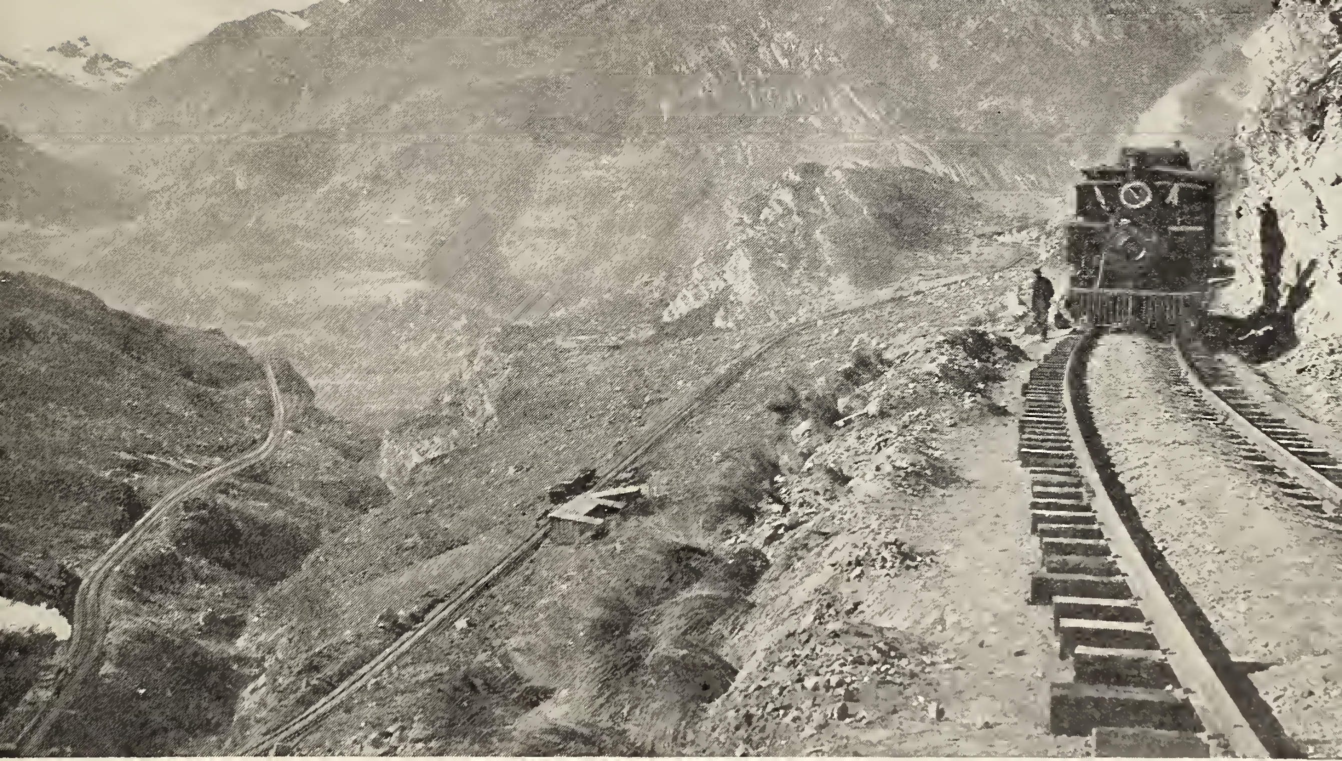
The Indian of the Andes laughs at the flat-chested white man. Nature has given the plateau Indian big lungs that will hold all the air he needs.

The Indian is a farmer. On tiny little fields among the rocks he grows wheat, barley, oats, quinoa—a cold-weather grain—and potatoes. He is also a shepherd. He follows his flock of sheep or of llamas to the frosty meadows at the edge of the snow.

Llamas are the four-legged freight trains of the Andes that carry the Indian's goods. Llamas provide the Indian with meat to eat and wool to make the blanket he wears. They help him to live and to make a living in this cold land near the sky.

The Indian is also a miner. With 11,000 or more of his fellows he works in some of the world's richest mines at Cerro de Pasco. These mines that have been worked for 300 years are still yielding riches of copper, gold, silver, and vanadium.

About 18% of the money Peru receives for her exports comes from copper. Vanadium is a metal used to toughen and harden steel. Peru leads in its production.



Ewing Galloway

Peru has a railway with three levels of tracks. An ore train puffs along the low track, and 1,000 feet above it a passenger train pauses on the high track. The middle elevation is between them.

Peru east of the Andes. The railroad that climbs the Andes from the west does not go down the eastern slope. No railroad goes down the Andes to the Amazon Basin in any country.

A look at the map will show you that in Peru many branches of the Amazon flow parallel to the Andes for a long distance. You will also see that the eastern slope of Peru has much mountain slope land between the high plateau and the low forest. Almost nothing was done with this land until the trucks and automobiles came. Now Peru is trying to open up the east hill country by building eight truck roads. Most of them are already open. The best one goes over the mountains from Lima. The road follows an old mule trail which has been blasted wide enough for trucks. But the road is not wide enough to allow trucks to pass. So they have "up days," when all the vehicles go up, and "down days," when all the vehicles go down. In places the gorges are so narrow that there has to be much blasting of rock to make room for one truck between the river and the canyon wall. The canyon wall is so steep that little waterfalls shower water on your automobile as you pass. At one place a tunnel was made for the river to run in, so that the road can use the old river bed.

The road is not paved. Many men are working all the time to keep the ruts filled. In heavy rains mud often slides down and blocks the road for several days, but even so, it is much better than traveling by mule back.

This road ends at Puca, on the Ucayali, a branch of the Amazon, where steamboats can carry you on to Iquitos, Manáos, and the Atlantic Ocean.

Places on this route which used to be 20 days from Lima by mule back are now only 15 hours by truck. Bananas, oranges, and fresh vegetables are going up to the plateau in larger quantities than ever before. These things used to go up to the plateau people in very small quantities on the backs of mules.

The settlements on the plateau are old—many were made before the time of Columbus—but most of the houses on the eastern part of this new truck road are new. It is a frontier where new settlements are being made.

Peru east of the Andes is a "world-of-tomorrow land." There it waits for many thousands of settlers to come in and make homes for themselves. The streams that flow down the eastern slope may make much electricity if men will harness them. But we should not forget that much of eastern Peru is the montaña, the lowland forest.

1. Look for pictures showing the narrow mountain roads between the plateau and eastern mountain valleys.

Cuzco. We return to Lima and follow the Pan-American Highway southward to the seaport of Mollendo. Another skyscraper railroad lifts us over the Andes and on to Cuzco.

When Columbus discovered America, Cuzco was the capital of an Indian Empire that extended from central Chile to northern Ecuador. The ruler was called "The Inca."

The Indians of this ancient Inca Empire farmed the flat lands of the high plateaus. To get more land, they made stepfields, called terraces, on the mountainsides. They planted the terraces with crops almost to the edge of the snow. They irrigated valleys near the coast. Their empire stretched to the seacoast.

The Incas passed laws to protect the birds on the guano islands, and farmers had fertilizer to bring to their fields. They had good roads, bridges, and well-kept towns and cities.

The Indians of the Inca Empire were great builders. They used no mortar. They built temples and palaces by fitting big stones together so closely that water could not trickle between the stones. Some of these wonderful buildings still stand.

Francisco Pizarro, a Spaniard, came to Inca Land in 1532. He had less than 400 men. But his soldiers had guns. The Indians had none. Pizarro captured Atahualpa, the ruling Inca.

"Fill me a room with gold, 22 by 17 feet and as high as I can reach," ordered Pizarro. "Fill me two rooms with silver," said he. And the Inca did.

That was only the beginning. For 300 years, gold and silver flowed from Inca Land to fill the pockets of the kings of Spain. Pizarro made Lima the first capital of all Spanish South America.

Then the Spaniards began to quarrel among themselves and Pizarro was killed. He lies buried at Lima. Only ruins remain to tell the story of the very great people that had Cuzco for their capital.

Bolivia

Tin roof of the world. We go by train from Cuzco to Puno, on the shores of Lake Titicaca. There a steamer is waiting to carry us in to Bolivia. An officer of the Titicaca steamer tells us that all parts for the boat were made in Scotland. The parts were shipped to Mollendo, taken by railroad across the Andes, and put together beside the lake. Parts for older boats were carried up on the backs of mules and Indians.

Soon we are sailing along like a toy boat in a washtub. But the sides of the tub are the tall peaks of the Andes, the water is Lake Titicaca, one-third as large as Lake Erie, and we are 12,500 feet up. The next morning we land at Guaqui, "seaport" of Bolivia.

1. Check your map to help you explain why quotation marks are used to call Guaqui a "seaport" of Bolivia.

Four miles up. Near the dock stands a friend from home—a United States railroad train. We climb aboard and are soon zigzagging up one side of the Andean "washtub." We shiver with cold, gasp for breath, and suffer from siroche, or mountain sickness.

No wonder! We are three miles up and gazing at scenery that goes one mile higher. Sorato and several mountains round about her lift their snow-bonnets four miles into the blue.

The altiplano. We cross the western range of the Andes and look down. The red tile roofs of La Paz glisten in the sun fifteen hundred feet below. The cities of La Paz, Oruro, Sucre, and Potosí lie on the altiplano, a high plateau between the ranges of tall peaks. The plateau has flat plains, salt marshes, rolling hills, and no trees. It is two miles or more above the sea. Altiplano weather is always chilly and sometimes bitter cold. It suffers from snow, sleet, hail, and winds that forever blow. The Indian shepherds wear masks of wool to protect their faces from the fierce wind.

Some barley will grow on the plateau, also potatoes, quinoa, and grass for llamas and alpacas. Quinoa, a grain of the cold highlands, is eaten as gruel.

You think this is a miserable place to live, but the Bolivians do not agree with you. Eight out of every ten persons in Bolivia live in the small highland part of their country above 10,000 feet.

AMORC Rosicrucian Park

The grand stairway leads to Inca Palace in the high Andes of Peru. The Incas were skilled craftsmen and excellent farmers.

Why? Two reasons give the answer.

1. More than half of the Bolivian people are pure Indian, and the altiplano Indians have the big, "barrel chests" that let them live comfortably and work hard in the thin air of high places.
2. The altiplano is a treasure house of minerals. It stands second only to the Malay Peninsula in the mining of tin. It leads the world in antimony, and has large stores of gold, silver, copper, lead, zinc, and tungsten. Bolivia exports all of these metals.

1. Locate on a map the cities of La Paz, Oruro, Sucre, and Potosí.

2. Notice the widening of the plateau in the southern Peru-Bolivia area.

3. Use a dictionary to help you list one use for each of the minerals found on the altiplano.

Bolivia's capital. More than a quarter of a million people live crowded into the Andean pocket that holds La Paz, Bolivia's largest city—sometimes called the "highest capital in the world." La Paz has a very beautiful capitol building in which the Bolivian congress meets. And it has offices for the president and other government workers.

Cerro Rica. Long ago an Indian was looking for his llamas in the high Andes of Bolivia. Night overtook him. He made a fire for warmth and lay down to sleep. The next morning he saw something shining in the ashes. It was threads of pure silver that had been melted from the rock by the Indian's campfire.

That is the story, or one of the stories, of how Cerro Rica, the "rich hill" of Potosí was discovered. Cerro Rica is a mountain more than 2 miles high. The Spaniards, during their rule of South America, took two billion dollars worth of silver from this region. And Potosí, by the year 1611, had 160,000 people. It was by far the largest and finest city in the New World.

Tin. Potosí has today about 40,000 people. They mine very little silver, but mine much tin and other minerals with the tin. Several other mines, equally as rich in tin ore, have been opened near Oruro.

The ore is shipped to England where it is refined. Pure tin and other metals are taken from the ore. Some of the tin comes back to Bolivia as a covering on "tin" cans.

Tin brings in 71% of the money Bolivia gets for her exports; silver, 7%; and other minerals, 16%. Lucky indeed is Bolivia to have Indians for the heavy jobs in the mines high up where the air is thin and where lowland men cannot get enough breath to do hard work.

1. Trace the routes over which tin would travel to Santos, Brazil; to Buenos Aires, Argentina; to Antofagasta, Chile.
2. Trace the routes ships would take from these three ports to England.

The Yungas. At our hotel in La Paz, we are served oranges for breakfast one morning and bananas the next morning. We know that such fruits of the warm lands would not grow on the chilly plateau of La Paz.

We ask the manager, who speaks English, about this. He has a drawing which shows Bolivia and Peru cut through as you would cut a pie. Such a drawing is a cross section. "You see," says the manager, "that the Andes slide off the altiplano gently toward the lowlands of the Amazon. This eastern slope has many streams that flow down to join the big river.

"Follow one of the streams to the place where it empties into the big river. Take a thermometer with you and stop where the weather suits you. You may have any temperature you like, from freezing cold to steaming hot. You may have any crop you fancy from quinoa in the high places to bananas in the jungle. Bolivians call this highland-valley country the Yungas.

"It is also called the 'bread basket of Bolivia,'" continues the manager. "'Food basket' would be a better name. The Yungas is very important for us who live on the plateau. The Yungas grows vegetables of almost all kinds, fruits, corn, coffee, sugar cane, cotton. Most important of all, the Yungas grows coca which is so necessary to the Indians.

"Coca is a plant from which we get cocaine. As you know, that drug is used to deaden pain and as a stimulant.

"The Bolivian Indian chews coca leaves. He chews and he chews and is happy. He may work without food, but he won't lift a hand without his coca."

1. Why is the Yungas important to the people in the plateau cities?
2. Has your dentist used cocaine when he filled or pulled a tooth for you? If so, was it used to deaden pain or as a stimulant? What is a stimulant?

Lowlands of Bolivia. Keep walking down the valleys of eastern Bolivia and you will come either to the jungles of the Amazon or to the Bolivian part of the Chaco. The Bolivian Chaco is another of those unused back countries like the llanos of Colombia.

The Bolivian part of the Amazon jungle is just another piece of the tropical forest about which you have studied. Rubber and Brazil nuts grow wild in these lowlands. It is the natural home of cacao, bananas, cinchona, mahogany, and many other useful trees. But the big jobs of this far-away land are:

How to get in; and how to get out.

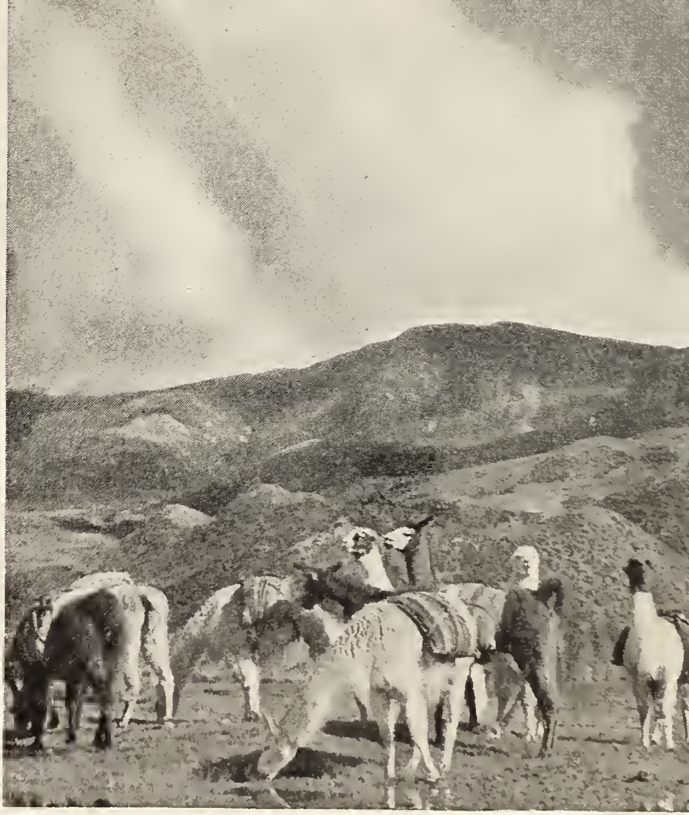
In 1938, Brazil and Bolivia made a treaty by which Bolivia may build a railroad from the isolated town of Santa Cruz to Brazil's river port of Corumbá.

Landlocked. Every letter that comes into or goes out of Bolivia, every import, every export, every traveler, must go through or over some neighbor country or countries. The airplane may be a big help. In the world of tomorrow, Bolivia may dig oil wells and refine its own ores and ship pure metal. That would mean less freight to pay.

1. Trace the route a railroad could follow from Santa Cruz, Bolivia, to Corumbá, Brazil.
2. How would such a railroad aid Bolivia?

Chile

Shoestring land. Chile is long drawn out—a kind of shoestring country, 2,600 miles from end to end. This ribbon of land is 250 miles wide at the north near Antofagasta, but narrows toward the south to as little as 57 miles.



Black Star

The llama, beast of burden in Peru and Bolivia, can carry as much as 100 pounds.

One day an English businessman in a port in northern Chile wrote to a friend in England, who was coming to visit him. The letter said, "You need not bring an umbrella. I have been here for 19 years and it hasn't rained yet." When the friend got to Chile, he got off the ship in a pouring rain—a sudden shower—the first in 19 years!

A traveler in southern Chile wrote to a friend, "Yesterday the weather cleared after 30 days of rain." That is not uncommon for southern Chile.

Chile also has the driest desert in the world—the one with the least rainfall. The wettest forests we know are in southern Chile. It is said that in one place in southern Chile it rained for 131 days without stopping. There are really three Chiles—the desert Chile in the north, the wet forest Chile in the south, and the in-between land of good farming weather in the center.

We have learned that Bolivia has no seaport at all, but neighbor Chile has the Pacific Ocean for a front yard and 60 seaport towns between Peru and Cape Horn.

1. How many miles of ocean front does Chile have?
2. With which part of western North America does southern Chile compare? northern Chile? central Chile? Compare latitudes.
3. Study again the map showing Chile superimposed on the United States.

The Chilean desert. Northern Chile, called the Atacama Desert, is a piece of the "land of never wet," but with a difference. The Peruvian piece of this land has streams from the Andes flowing through it to make desert valleys green with crops. The Chilean piece also has mountain-fed streams, but the streams are small, and the water either evaporates or sinks into the soil long before it reaches the sea. There are a few small patches of irrigated land at the foot of the Andes, and then miles and miles and more miles of bare earth, bare sand, and rocks between these little oases and the sea.

The Andes Mountains here are bare, too, except for a few plants at the base of the snowcaps on the high peaks. For most of her great length, Chile has two mountain ranges. The mighty Andes stand like a wall at the east and a lower range is near the sea. There are many breaks in this coast range.

In northern Chile the land between the coast range and the Andes is a rolling plain of sand, gravel, rock—no water, no trees, no grass, no crops. The land is parched. It is sunburned, but, strange to say, this driest of all deserts has riches in it. It has minerals, the world's richest beds of Chile saltpeter or nitrate of soda. The neighboring Andes have copper and other valuable metals.

1. What causes the difference between the Peruvian desert land and the Atacama Desert?

Chile saltpeter. Long ago a Chilean woodcutter, Negreiros by name, built a fire in the desert to cook his supper. The earth about the fire flashed, spluttered, and then seemed to melt and run like liquid flame. "Fire and brimstone!" gasped the frightened Negreiros. He rushed to his priest. "Fire and brimstone," muttered the priest as he came quickly to see this strange thing.

The priest took some of the "brimstone" home. He examined it, but did not know what it was, so he tossed the bits out his study window.

Weeks passed. One day, when the priest was working in his garden, he noticed that plants under the window grew tall and strong and had more fruit than plants in other parts of the garden. He began to tell people how "brimstone" made plants grow. An English sea captain heard the priest's story. He carried a sack of the strange mineral to England, and his garden produce grew like magic. The world had a new fertilizer—Chile saltpeter—nitrate of soda, we call it. It has been a valuable fertilizer for many years, and for a long time Chile shipped all that was used.

Two billion dollars' worth of nitrate of soda went out from Chile's desert in the hundred years between 1820 and 1920. And every ton shipped was taxed $10 to $12 by the Chilean government.

(©) *William LaVarre from Gendreau*

The world's greatest nitrate beds lie in Chile. Nitrate is mined by the open pit method, a surface-scraping process. Iodine is a by-product of nitrate, Chile's second most important export.

"We are lucky," said the people of Chile. "Nitrate pays about half our taxes."

But chemists have learned how to take nitrogen from the air and to make nitrate fertilizer. Factory nitrate began to sell for less than it cost to gather Chile saltpeter. The people of Chile were worried. "How can we save our nitrate business?" they asked.

An American copper company in Chile offered to help. The copper company had chemists. These men of science learned how to get 50% more nitrate from the ore than the Chileans had been getting. The American and British companies that mined the nitrate used steam shovels and other machines for the hard jobs—not hand labor. One of their big crushers could break 16,000 tons of ore a day. The Americans in Chile handled the ore and shipped the pure nitrate as we do wheat and iron ore at Duluth.

Down came the price of Chile saltpeter and more of it was sold. Maybe the nitrate business of Chile has been saved, maybe not. Time will tell. The Chileans are badly scared and have good reason to be, because our nitrate factories get nitrogen from the air.

Other minerals. The Andes east of the Atacama Desert have the world's richest copper mine and about a third of the world's reserves of copper ore. Chile also has at least a billion tons of iron ore, also gold, silver, sulphur, some coal in the south, and one of the most useful of all minerals, common salt. Nearly all of the world's iodine comes out of the nitrate as it is refined. About 80% of the money Chile got for its exports in recent years came from minerals.

When workers first began to get nitrate from the Atacama Desert, they and their families had no water to use except that which was brought in ships from rainy lands of the south. Now long pipe lines carry water from the Andes to the nitrate works, which are scattered along on the plateau from 4,000 to 7,000 feet above the level of the sea.

The thousands of people who work and live here do not have water enough to grow crops, and so every radish, every cabbage, every apple, every egg, as well as every sack of grain, every pound of meat or bale of hay must be brought by ship or by train several hundred miles from the land of farms in central Chile.

1. Check a map to study the coast line of northern Chile and of southern Chile. Is it fairly regular, or is it broken?
2. Many of the harbors of northern Chile are man-made. Why has man been interested in developing ports in this desert land?
3. Check the appendix for Chile's exports.

Central Chile — the garden spot of South America. The heartland of Chile extends from the edge of the desert at La Serena, latitude 30°, rainfall 5 inches a year, to Puerto Montt, 800 miles to the south. This part of Chile is much like central California—a fine valley of farm land between the high Andes and the lower coast range. Unfortunately the belt of good land is only 20 to 25 miles wide and chopped into many pieces by many short rivers that flow through the coast range.

This valley is like California in another way. It has a rainy winter and a dry summer as our graph shows.

This valley of central Chile is the home of eight out of ten Chileans. It has some of the finest farm land in South America. In winter, snow piles up on the Andes. Snow melts during the spring and summer and gives water for irrigation in the valleys. This is a land of wheat and barley, of alfalfa, fruit, and almost everything else that will grow in California. The sunny summers are perfect for ripening fruit.

The valley of central Chile, like the Great Valley of California, is famous for its fruits. Chileans often speak of it as the "California of Chile." Near Santiago are orchards of peaches and apricots, fields of melons, and vineyards. Grapes are the main crop and wine making the chief manufacturing business. Raisins, fresh grapes, and wine are sent to other South American countries. Some peaches and plums come to the United States in May and June.

The southern part of the valley has a climate like that of western Oregon and Washington. Apples, cherries, and pears are grown there.

Santiago, capital of Chile and largest city, lies in the valley. Valparaíso, 90 miles by road and rail from the capital, is the largest and busiest port on the west coast of South America.

Other ports are Concepción, the coal mining center and third largest city in Chile, Antofagasta, a great copper shipping port, and Iquique, the leading nitrate port.

1. Use the climate regions map to compare central Chile with central California. Compare latitudes, rainfall, rivers, and mountain ranges.
2. During what months are peaches and plums picked in Chile? in California?
3. Locate on a map these Chilean cities and name an important fact for each:

Santiago
Valparaíso
Concepción
Antofagasta
Iquique
Puerto Montt

Lakeland. In the southern end of the great valley near Puerto Montt is Chile's land of lakes. It is over-the-mountain neighbor to the Argentine lake district. The part in Chile has the same tall mountains with forest-covered sides, snow-capped tops, glaciers, dashing waterfalls, and green meadows. The quiet lakes nestle among the peaks and hold a mirror to nature.

People on vacation visit the lake country in summer—January and February. At that time there are sunny days for swimming, boating, hiking, and mountain climbing.

Wet Chile, the land of the roaring forties. At Puerto Montt the Chilean valley ends. To the south there is an inland sea between the Coast Range and the Andes. The Coast Range breaks into many islands, with forest-covered mountains, snow peaks, glaciers, fiords like South Alaska and Norway, and the Andes looking down upon it all. This is the land of the cold wind that seems to blow into one's very bones. This is the land of the wet west wind called "roaring forties" that picks up moisture over the ocean and strikes the mountains like a dripping sponge. This is where the traveler said, "The weather cleared after 30 days of rain." Some of this wet forest country has no people except a very few Indians who have learned to live where water falls from the sky or drips from the branches of the trees most of the time. A few Chileans have gone there to cut lumber.

1. Compare southern Chile's climate with the climate of southern Alaska. You may want to refer to the section in this book that tells about the land, climate, and people of southern Alaska.
2. What do you think would be the color of the land of southern Chile as seen from an airplane? of northern Chile?

Tierra del Fuego. Magellan Strait cuts through Chile from the Pacific to the Atlantic. It cuts Tierra del Fuego, "land of fire," from the mainland of South America.

Tierra del Fuego is a group of big and little islands. Its western part has snowy mountains, glaciers, fog, rain, howling wind, blinding snowstorms. Magellan, sailing out of the angry waters of the strait into the peaceful ocean, named the ocean Pacific, the peaceful.

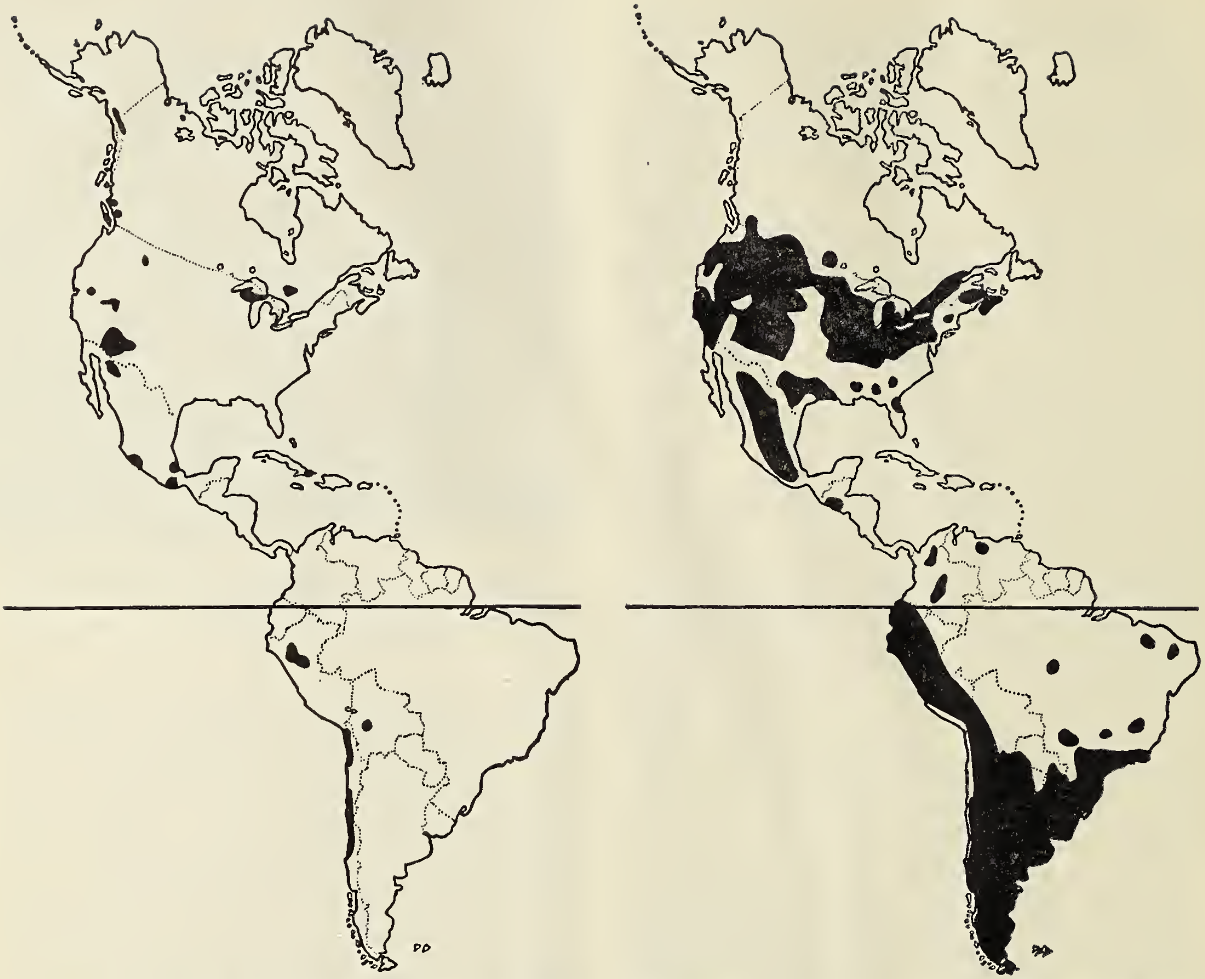
The map shows that in the far south Chile owns some land east of the Andes. There is much less rain east of the Andes. This is grassland and sheep country, like the better part of Patagonia. The town of Magallanes on the strait is the southernmost city in the world and exports wool and frozen mutton.

(©) *Screen Traveler from Gendreau*

Santiago, Chile's capital, is among the largest and oldest South American cities.

The future of Chile. The Chileans buy most of the manufactured things they use from other countries. They pay by selling nitrate and copper. The thoughtful Chileans are very much afraid that the nitrate factories of the United States and Europe will kill their nitrate trade, and they know that dull times make a low price and small demand for copper. What else has Chile?

Chile is using most of her good farm land, but in 1942, she grew but 7.8 bushels of cereal grain per person, while the United States grew 40 bushels per person. It is easy to see why Chile was importing cattle, stock food, meat, and wheat. Can Chile have an export trade in farm produce? The government is trying to improve agriculture, but Chile, like other Spanish-American countries, had the land given out in great estates,



Copper is found in scattered areas in the Western Hemisphere. Production of wool is also scattered, but in larger areas. Describe the geographic conditions of sheep-grazing regions.

and most of these great haciendas have not been divided.

It is not easy to make these landlords and these workers into scientific farmers, and if they make more fields, they must be on hilly land which erodes. The level land is all in use now. Fomento has become the style. There has been much effort of late to increase manufactures so that they will not have to buy so much from other countries.

Something to Do

1. Cocoa is one of the things made from cacao beans. Be sure you notice and remember the difference in the spelling of these names. How many items can you list that use cacao in some form?

2. You remember that one degree of latitude is equal to approximately 69 miles. How many miles south of the Equator would you say Guayaquil is located, 50—175—300?

3. Discuss this statement in class:

   a. Distance from the Equator has less effect on climate than has altitude; Quito and Guayaquil are good examples to prove this fact.

4. Scenes can be pictured by telling about them—that is, giving a word picture. Other pictures can be photographs, paintings, or pencil and crayon sketches. Produce your own picture of the part of Ecuador east of the Andes Mountains by giving a word picture or by making a pencil or crayon sketch of it.

5. Give the best short answers for:
  a. direction in which you will travel from Guayaquil to Lima
  b. the correct name for the "turtle islands"
  c. capital city of Ecuador
  d. the most important "cash" product of Peru
  e. seaport of the capital of Peru
  f. metal used to make steel hard
  g. valuable wool-bearing animal
  h. legal capital of Bolivia
  i. material from which clothing of altiplano people is made
  j. the zone in which northern Chile lies

6. Write in your own words about the effect of the Humboldt Current on the weather in South America.

7. If you know someone who has traveled over very high mountains, invite him to tell the class about his trip. Ask him to describe the difference in the air on the mountain and in the low valleys.

8. Give the answers to these two questions:
  a. How has the building of roads on the eastern Andean slopes affected the farmers in the mountain valleys?
  b. Why are Peruvians interested in their settlements of the eastern frontiers?

9. List the three chief regions of Peru and describe each one. Tell about its land, climate, people, and crops. Does Peru have much good unused farm land?

10. You may want to read about the Incas and tell the class interesting legends and facts about them.

11. Explain how the supply of the exports of cotton and sugar is dependent on the Andean mountain streams.

12. According to a recent estimate, only five percent of the area of South America is fit for agriculture. Think of the countries one by one and see what are the conditions that make this estimate seem true.

13. Write a paragraph to explain this statement: "Bolivia is more geographically handicapped than is either Peru or Ecuador."

14. Here are five sentences that have been cut apart and jumbled. Write the first part of each sentence in Column I and then complete the sentence by selecting its ending from Column II.

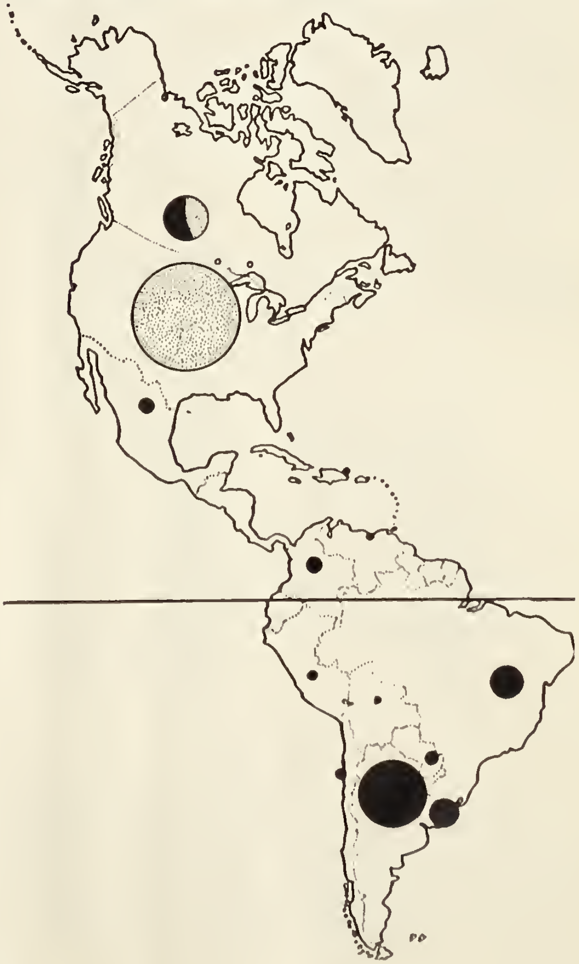
Column I

a. The lack of transportation is a serious problem for Bolivia
b. Grazing is the chief occupation on the altiplano
c. Ecuador is hot and wet along its coast
d. People live and work on the Atacama Desert
e. Most of the food produced in Chile's central valley is used by Chile

Column II

——because the climate is too cold for farming.
——because there are rich deposits of nitrate rock and copper ore.
——because the northern deserts and the southern wetlands cannot produce food crops.

World trade in hides is shown by circles, dotted circles—import, and black circles—export.



——because most of her exports are the ores and heavy metals.

——because the Humboldt Current does not come far enough north to affect its climate.

15. Prove this statement true by listing geographical facts: "Chile has almost every variety of soil and climate."

16. Read again the chapter on the Great Valley of California. Then make a list of the ways in which the valley of Chile and the Great Valley of California are alike. Make another list showing their differences.

17. If you could visit Chile, when would you want to go and what part of the country would you like to see?

18. Mining, you have learned, is an extractive industry, and extractive industries cannot be permanent. Review your understanding of this fact; then explain why Chile should expand her fruit and farm crop exports. Should she expand her manufactures?

19. Choose one of the four countries—Ecuador, Peru, Bolivia, or Chile—and write a paragraph or two telling how "Fomento!" could help the country's progress.

20. Collect pictures for your scrapbook of interesting scenes in these four South American countries.

21. Match by writing on a piece of paper the product in Column II with its source in Column I.

Column I	Column II
a. cacao	buttons
b. tagua nuts	life jackets
c. tarquilla palm	cocaine
d. cinchona	llama
e. kapok	fertilizer
f. guano	cocoa
g. coca	iodine
h. saltpeter	rubber
i. wool	Panama hats
j. latex	quinine

A Short Quiz

Write the numbers of the true statements in the following exercise. Rewrite the false sentences to make them correct.

1. The principal export of Ecuador is cacao.

2. The low coastal plain produces good farm crops.

3. There is only one kind of land surface in Ecuador.

4. Ecuador has few people per square mile because it has few railroads.

5. Two unusual products of Ecuador are balsa and tagua nuts.

6. The oil fields of Peru are in the southern part of the country.

7. The Humboldt Current causes the dry weather along the southwestern coast of South America.

8. The farmers of Peru use water from mountain streams to irrigate their crops.

9. Llamas are the Peruvian cowboys.

10. Cerro de Pasco has some of the richest oil fields of the world.

11. The montaña is a dry, sandy plain.

12. The altiplano is a high plateau on which La Paz is located.

13. Potosí is the center of Bolivia's fruit industry.

14. The Yungas has a higher elevation than the altiplano.

15. Most of Bolivia's people live in the Yungas.

16. The chief wealth of the Atacama Desert is nitrate rock.

17. The chief exports of Chile are farm crops.

18. There is some grassland in Chile's southern part, east of the Andes.

19. Most of Chile's people live in the southern part of the country.

20. Apples in the southern part of the Chilean Valley ripen during our spring season.

Stories You Will Enjoy

Brazil, Land of Surprises by Ralph Haefner—Lyons

Little Jungle Village by J. B. McE. Waldeck—Viking

Sandalio Goes to Town by K. G. Pollock—Scribner

Gregorio and the White Llama by Laura Bannon—A. Whitman

They Live in South America by Alice Dalgliesh—Scribner

Jorge's Journey by A. C. Desmond—Macmillan

Pageant of South American History by Anne Merriman Peck—Longmans

Hides, Wool, and Copper

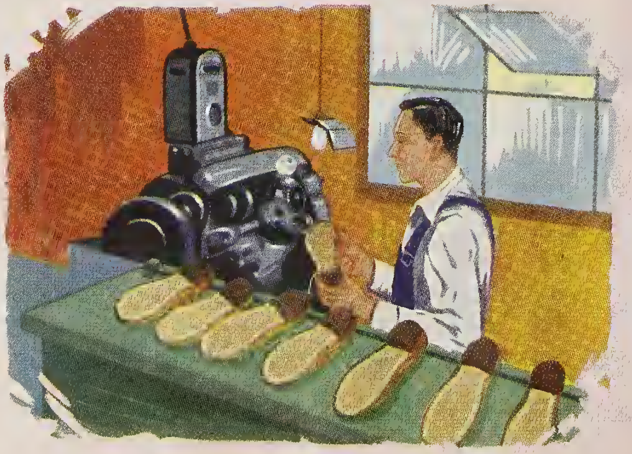
Our neighbors in South America supply us with a good part of the raw material for our shoes. A look at the distribution map of wool shows that these Southern Hemisphere neighbors also have a large area of wool-producing land. Mines here contribute a share of the well-known and useful metal, copper. The following three pages give production picture stories of three materials—hides, wool, and copper.

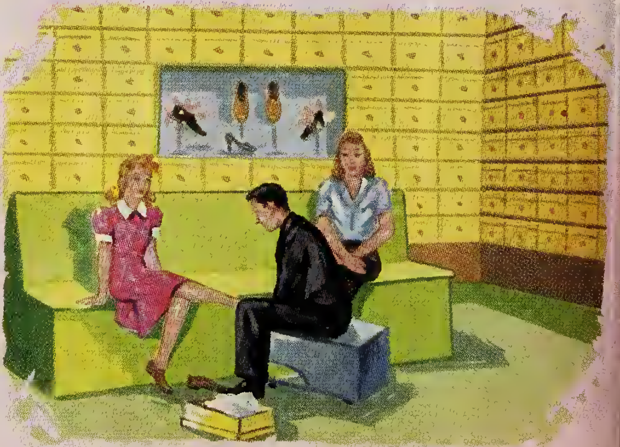
On the grasslands cowboys herd thousands of cattle—cattle which will travel to slaughter houses and whose hides will be tanned to make leather. Hides are dried in the sun to preserve them between the time they are taken off and the time they are tanned. Ships transport the dried hides to factories where they are tanned and treated to finish the leather. A large percentage of the leather is used in making shoes. What are other uses of leather?

Have you ever thought of the steps or processes that change a sheep's coat into a coat for you? Look at the artist's panel on wool. Six pictures show you—sheep in pasture; sheep in pens; workers shearing sheep; bales of fleeces on their way to factories; a weaver at his loom in a woolen mill; and customers buying a topcoat in a clothing store. What steps or processes are necessary between the time fleeces are marketed and the time woolen cloth is taken from a loom? You may want to read in an encyclopedia about processing wool and report on it to your class.

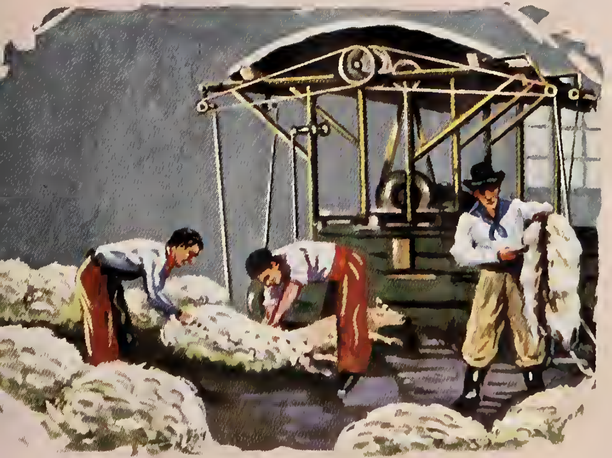
Copper has been used longer than any other of the common metals. The artist shows a miner operating an air-driven drill in a copper mine. The ore is blasted from the wall and carried in electric cars to the surface of the mine. After the ore has been melted in the furnace, the copper that comes out is called "matte". This copper product, matte, is placed in converters where it is changed to "blister" copper—99 per cent pure. Further processing produces copper that is 99.9 per cent pure. Transporting copper in shapes called pig copper to be used in industry is the next step in copper production. The largest portion of copper is used by the electrical industries. The artist shows a wire drawing machine. There are many other uses of copper, such as wire cloth, or screening, coins, and radios. Can you add to the list?

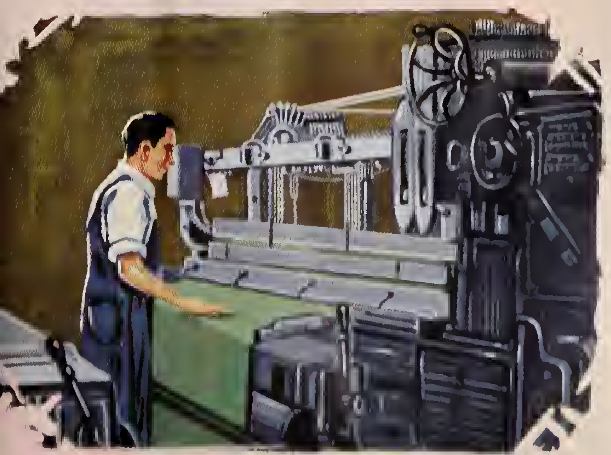
Hides



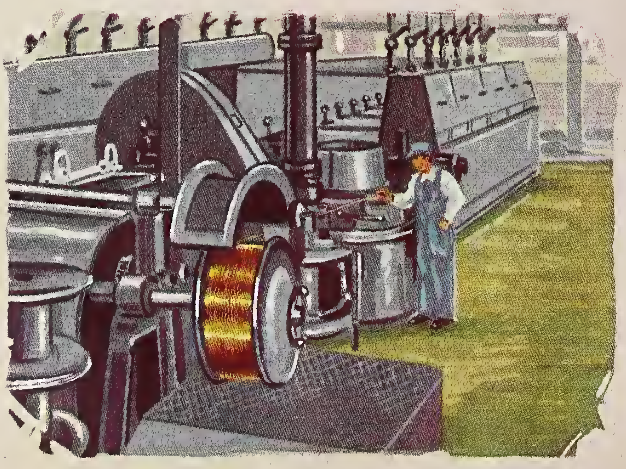


Wool





Copper



STATISTICS

I. NORTH AND SOUTH AMERICA, THE WEST INDIES, AND OUR ISLAND POSSESSIONS

Country	Area, sq. m.	Population	Pop. per sq. m.	In Million Dollars	
				Total Imports	Total Exports
North America					
Alaska	586,400	72,524	0.1	48.1	40.5 (not incl. gold)
Bermuda	19	33,925	1,785.5	5.3	0.1
Canada (Land Area)	3,466,882	11,506,655	3.3	577.8	637.3
Alberta	248,800	796,169	3.2	......	....
British Columbia	359,279	817,861	2.3	......	....
Manitoba	219,723	729,744	3.3	......	....
New Brunswick	27,473	457,401	16.6	......	....
Northwest Territories	1,258,217	12,028	0.01	......	....
Nova Scotia	20,743	577,962	27.8	......	....
Ontario	363,282	3,787,655	10.4	......	....
Prince Edward Island	2,184	95,047	43.5	......	....
Quebec	523,860	3,331,882	6.4	......	....
Saskatchewan	237,975	895,992	3.8	......	....
Yukon Territory	205,346	4,914	.02	......	....
Central America					
British Honduras	8,867	63,390	7.2	3.9	2.5
Costa Rica	23,000	725,149	31.5	9.9	4.4
Guatemala	45,452	3,283,209	72.2	9.4	6.1
Honduras	44,275	1,105,504	24.9	6.0	5.7
Nicaragua	57,143	1,013,946	17.7	4.2	5.6
Panama	28,576	622,576	21.8	14.1	2.4
Panama Canal Zone	553	44,688	80.8	......	....
El Salvador	13,176	1,896,168	139.0	4.8	7.2
Greenland	736,518	18,431	.02	......	....
Mexico	763,944	19,653,552	25.7	72.7	103.4
Newfoundland	42,734	313,022	7.3	16.2	20.4
Labrador	110,000	4,716	.04	......	....
United States (Land Area)	2,977,128	132,563,271	44.5	1,500.5	2,323.5
West Indies					
Bahama Islands	4,404	68,846	15.6	......	....
Jamaica	4,628	1,243,211	268.6	17.7	14.2
Other British West Indies	3,389	1,114,365	328.8	......	....
Cuba	44,164	4,777,284	108.2	55.3	67.6
Dominican Republic	19,332	1,826,407	94.5	6.2	10.8
Haiti	10,204	3,000,000	294.0	4.7	3.2
Puerto Rico	3,435	1,543,913	449.4	90.1	97.3
Virgin Islands (U. S.)	133	22,012	165.5	4.1	1.4
French West Indies	968	550,951	566.9	......	......
Netherland West Indies	403	124,866	309.8	......	....
South America					
Argentina	1,079,965	14,130,871	13.0	233.4	254.0
Bolivia	506,792	3,595,700	8.7	16.8	31.1
Brazil	3,275,510	45,300,000	13.9	148.2	155.6
Chile	286,322	5,191,027	18.2	61.2	82.2
Colombia	439,997	9,807,000	22.2	50.0	56.0
Ecuador	275,936	3,106,000	11.2	6.4	6.0
Falkland Islands	4,618	2,444	0.5	......	....
Guiana, British	83,000	367,201	4.3	6.3	7.1
Guiana, French	34,740	30,876	0.9	......	....
Paraguay	149,770	1,141,332	8.0	5.5	4.3
Peru	482,258	7,271,654	15.1	31.7	39.2
Surinam (Netherlands Guiana)	54,291	191,628	3.5	2.2	1.9
Uruguay	72,153	2,235,000	31.0	28.9	42.9
Venezuela	352,143	3,850,771	19.3	53.6	145.0
Our Island Possessions (not included above)					
American Samoa	76	10,055	132.3	......	....
Guam	206	18,509	89.8	......	....
Hawaii	6,433	368,336	57.3	......	....
Midway Islands	28	....	....	......	....
Wake	1	....	....	......	....

Source: Area and Population—Statesman's Year-Book, 1946.
Imports and Exports—Inter-American Statistical Year Book; 1940 World Trade.

II. SOME IMPORTANT FIGURE FACTS

Western States	Rural Population (thousands)	Per Cent People in Cities	Per Cent Area in Crops	Per Cent Area in Woodlands	Wheat (thousand bushels)	Sugar Beets (thousand tons)	Potatoes (thousand bushels)	Hay (thousand tons)	Fruit (carloads shipped)	Vegetables (carloads shipped)
Washington	814	53.1	8.7	5.5	55,148	....	7,800	1,906	41,041	8,434
Oregon	558	48.8	5.1	5.5	19,953	....	7,200	1,619	8,685	8,155
California	2,005	71.0	7.1	5.7	9,916	2,332	23,130	4,840	159,572	98,438
Idaho	348	33.7	5.6	1.8	20,770	1,076	30,590	2,141	4,344	31,299
Nevada	66	39.3	0.4	0.1	484	....	483	417	58	253
Utah	244	55.5	2.2	0.4	5,010	572	2,312	1,082	944	2,306
Montana	347	37.8	7.7	1.9	73,783	915	1,725	1,993	7	228
Wyoming	157	37.3	2.8	1.0	4,288	447	2,470	773	....	1,538
Colorado	532	52.6	10.9	2.7	27,848	2,178	17,020	1,840	5,951	22,668
Arizona	325	34.8	0.7	1.5	575	....	562	610	5,840	12,791
New Mexico	355	33.2	2.5	2.7	4,813	....	340	432	504	100

III. SOME IMPORTANT FIGURE FACTS

Southern States	Rural Population (thousands)	Per Cent People in Cities	Per Cent Area in Crops	Per Cent Area in Woodlands	Cotton (thousand bales) 500-lb.	Sugar Cane (thousand tons)	Fruit (carloads shipped)	Vegetables (carloads shipped)	Corn Production for Grain (thousand bushels)	Tobacco Produced (thousand pounds)	Value of Crops (millions and tenths of million dollars)
Texas	3,503	45.4	19.0	15.0	2,860	....	9,112	41,256	78,561	......	384.1
Oklahoma	1,456	37.6	34.3	10.9	385	....	28	1,005	35,631	......	94.0
Arkansas	1,517	22.2	20.2	19.4	1,110	....	2,139	1,300	37,116	......	157.2
Louisiana	1,383	41.5	14.2	11.8	735	4,920	3,319	9,736	24,412	......	135.3
Kentucky	1,996	29.8	21.5	21.1	....	....	410	131	82,200	298,495	131.8
Tennessee	1,888	35.2	24.1	23.2	490	....	384	2,798	75,924	87,808	139.7
Mississippi	1,750	19.8	23.1	25.5	1,840	....	1,157	6,356	49,198	......	226.3
Alabama	1,977	30.2	22.3	25.1	955	....	1,115	5,530	43,960	......	165.5
West Virginia	1,367	28.1	11.3	23.2	....	....	3,660	.....	14,042	......	29.7
Virginia	1,733	35.3	15.2	29.8	25	....	8,202	15,600	35,586	104,150	107.1
Delaware	127	52.3	31.4	18.6	....	....	881	754	4,092	......	11.6
Maryland	740	59.3	26.7	19.9	....	....	1,818	3,995	16,344	31,008	54.4
North Carolina	2,597	27.3	19.4	32.4	595	....	2,799	7,108	47,068	574,400	253.2
South Carolina	1,433	24.5	21.8	29.2	695	....	5,697	7,228	21,330	96,750	132.2
Georgia	2,049	34.4	23.4	31.1	350	....	17,204	1,116	39,160	59,710	191.1
Florida	851	55.1	4.6	7.4	17	781	61,826	34,898	7,413	14,778	85.0

IV. SOME IMPORTANT FIGURE FACTS

North Central States	Rural Population (thousands)	Per Cent People in Cities	Per Cent Area in Crops	Per Cent Area in Woodlands	Wheat (thousand bushels)	Corn Production (thousand bushels)	Hay (thousand tons)	Potatoes (thousand bushels)	Value of Crops (millions and tenths of million dollars)	Total Value of Fisheries (thousand dollars)
North Dakota	510	20.6	42.8	1.3	149,844	29,000	1,327	17,955	50.1	....
South Dakota	484	24.6	29.7	1.3	45,274	103,214	1,003	2,815	38.0	11
Nebraska	801	39.1	41.5	1.9	69,908	242,708	1,907	12,876	136.1	16
Kansas	1,047	41.9	46.0	2.4	206,775	90,060	2,059	2,300	181.4	17
Minnesota	1,402	49.8	38.0	10.4	23,170	207,190	5,473	19,380	249.2	1,087
Iowa	1,454	42.7	56.3	6.5	4,749	596,796	6,709	6,600	362.7	302
Missouri	1,823	51.8	29.7	20.2	9,035	146,899	4,349	4,173	150.6	77
Wisconsin	1,458	53.5	29.0	18.4	1,717	103,544	7,513	10,050	196.6	1,132
Michigan	1,801	65.7	23.4	10.4	15,322	69,703	3,926	16,562	173.5	2,156
Illinois	2,087	73.6	53.8	8.7	12,818	433,438	3,942	3,528	368.4	459
Indiana	1,540	55.1	45.4	13.3	13,865	216,702	2,809	6,480	200.0	209
Ohio	2,294	66.8	40.7	12.1	36,205	185,752	3,659	9,180	238.0	1,164

ABOUT THE WESTERN STATES

Value of Crops (millions and tenths of million dollars)	Total Value of Fisheries (thousand dollars)	Sheep (thousands)	All Cattle including Milk Cows (thousands)	Milk Cows (thousands)	Copper Mine production in terms of recovered metal (thousand pounds)	Petroleum (thousand barrels)	Total Value of Minerals (thousand dollars)	Total Value Added by Manufacturing (thousand dollars)	WESTERN STATES
109.2	6,329	548	990	384	150	......	13,688	286,647	....................Washington
69.9	2,077	1,372	1,127	287	920	......	5,120	172,175	........................Oregon
428.0	14,683	2,828	2,537	286	10,480	248,326	364,619	135,158	....................California
77.5	.....	1,635	882	266	4,300	......	21,918	31,770	..........................Idaho
5.0	.....	695	406	22	153,770	......	25,171	11,728	........................Nevada
24.2	.....	2,346	472	112	411,540	......	62,791	43,720	...........................Utah
44.6	.....	3,545	1,486	173	287,530	8,074	44,173	39,790	.....................Montana
21.7	.....	3,581	987	70	......	32,812	35,548	15,629	.....................Wyoming
96.1	.....	1,795	1,649	246	21,670	2,199	52,059	91,256	......................Colorado
30.8	.....	740	911	51	568,500	......	54,127	32,041	........................Arizona
21.5	.....	2,019	1,314	83	62,560	31,544	55,559	8,712	..................New Mexico

ABOUT THE SOUTHERN STATES

Total Value of Fisheries (thousand dollars)	Cattle, including Milk Cows (thousands)	Milk Cows (thousands)	Coal Produced (thousand tons)	Pig Iron Production (thousand tons)	Petroleum (thousand barrels)	Total Value of Minerals (thousand dollars)	Total Value Added by Manufacturing (thousand dollars)	Cotton Spindles (thousands)	SOUTHERN STATES
918	7,518	1,532	342	.....	483,097	555,208	453,105	239	.........................Texas
4	3,067	903	4,146	.....	140,690	196,803	103,118	.....	.....................Oklahoma
411	1,342	536		.....	26,628	25,345	67,390	.....	......................Arkansas
3,279	1,265	338	......	.....	115,725	121,202	200,036	.....	.....................Louisiana
61	1,396	612	59,967	457	4,534	41,285	187,400	.....	......................Kentucky
104	1,388	628	7,425	.....	......	22,133	320,342	529	.....................Tennessee
775	1,404	573	......	.....	28,833	2,139	73,462	.....	....................Mississippi
286	1,140	438	18,870	4,081	......	41,685	247,384	1,811	.......................Alabama
.....	604	243	156,750	1,408	3,574	322,780	214,779	.....	..................West Virginia
3,521	998	451	19,900	.....	......	34,436	379,488	636	.......................Virginia
430	58	38	......	.....	......	242	55,183	.....	......................Delaware
2,004	355	212	1,898	2,490	......	8,451	422,849	.....	......................Maryland
1,672	676	376	......	.....	......	4,257	545,952	5,716	.................North Carolina
225	366	179	......	.....	......	3,457	169,847	5,347	.................South Carolina
360	1,051	391	......	.....	......	8,077	283,316	3,037	........................Georgia
3,635	1,042	123	......	.....	......	11,155	118,016	.....	.........................Florida

ABOUT THE NORTH CENTRAL STATES

All Cattle, including Milk Cows (thousands)	Milk Cows (thousands)	Swine (thousands)	Sheep (thousands)	Coal Produced (thousand tons)	Pig Iron Production (thousand tons)	Iron Ore shipped from Mines (thousand tons)	Total Value of Minerals (thousand dollars)	Total Value Added by Manufacturing (thousand dollars)	Petroleum (thousand barrels)	NORTH CENTRAL STATES
1,714	608	957	1,020	2,488	......	.....	2,503	11,102	......	........North Dakota
2,132	540	1,977	2,126		......	.....	22,680	19,955	......	........South Dakota
3,596	707	3,491	395	......	......	.....	1,322	69,087	......	.............Nebraska
3,889	517	2,458	714	8,340	......	.....	77,531	118,952	97,636	..............Kansas
3,758	1,845	5,102	1,165	......	373	47,800	98,711	310,628	......	............Minnesota
5,422	1,544	13,028	1,256	2,990	......	.....	10,816	244,795	......	................Iowa
3,228	1,052	4,914	1,540	......	......	.....	27,167	587,962	......	.............Missouri
3,794	2,450	2,188	401	......	......	1,418	8,176	686,605	......	............Wisconsin
1,902	1,008	1,184	766	320	1,683	12,628	75,397	1,798,401	21,754	............Michigan
3,212	1,168	6,856	662	63,750	5,850	.....	187,219	2,201,595	106,391	...............Illinois
1,858	800	4,588	717	25,170	6,430	.....	35,443	970,212	6,743	..............Indiana
2,196	1,094	3,658	1,939	31,600	13,140	.....	63,221	2,125,474	3,543	................Ohio

V. SOME IMPORTANT FIGURE FACTS

Northeastern States	Rural Population (thousands)	Per Cent People in Cities	Per Cent Area in Crops	Per Cent Area in Woodlands	Hay (thousand tons)	Wheat (thousand bushels)	Potatoes (thousand bushels)	Value of Crops (thousand dollars)
Maine	504	40.5	7.3	12.6	894	40	42,120	52.2
New Hampshire	208	57.6	7.9	22.0	425	......	1,088	6.8
Vermont	235	34.3	19.2	28.6	1,161	......	1,473	20.3
Massachusetts	457	89.4	10.8	20.0	572	......	2,850	24.0
Connecticut	551	67.8	16.0	32.1	441	......	2,942	22.3
Rhode Island	59	91.6	9.8	21.8	49	......	975	2.6
New York	2,313	82.8	24.6	13.2	5,920	7,559	27,405	161.4
Pennsylvania	3,313	66.5	23.9	12.8	3,303	15,301	17,584	44.9
New Jersey	765	81.6	18.0	7.4	379	1,175	10,136	176.7

VI. POPULATION OF SOME OF OUR STATES AND

	1940	1930	1920	1910	1900	1890	1880	1870
Vermont	359,000	359,611	352,428	355,956	343,641	332,422	332,286	330,551
Ohio	6,907,000	6,646,697	5,759,394	4,767,121	4,157,545	3,672,329	3,198,060	2,665,260
Illinois	7,897,000	7,630,654	6,485,280	5,638,591	4,821,550	3,826,352	3,077,871	2,539,891
Iowa	2,538,000	2,470,939	2,404,021	2,224,771	2,231,853	1,912,297	1,624,615	1,194,020
Kansas	1,801,000	1,880,999	1,769,257	1,690,949	1,470,495	1,428,108	996,096	364,399
North and South Dakota	1,284,000	1,373,794	1,283,419	1,160,944	720,716	539,583	135,177	14,181
Colorado	1,123,000	1,035,791	939,629	799,024	539,700	413,249	194,327	39,864
California	6,907,000	5,677,251	3,426,861	2,377,549	1,485,053	1,213,398	864,694	560,247
Georgia	3,123,000	2,908,506	2,895,832	2,609,121	2,216,331	1,837,353	1,542,180	1,184,109
Alabama	2,832,000	2,646,248	2,348,174	2,138,093	1,828,697	1,513,401	1,262,505	966,992
Mississippi	2,183,000	2,009,821	1,790,618	1,797,114	1,551,270	1,289,600	1,131,597	827,922
Boston	770,816	781,188	748,060	670,585	560,892	448,477	362,839	250,526
New York City	7,454,995	6,930,446	5,620,048	4,766,883	3,437,202	2,507,414	1,911,698	1,478,103
Philadelphia	1,931,334	1,950,961	1,823,779	1,549,008	1,293,697	1,046,964	847,170	674,022
Baltimore	859,100	804,874	733,826	558,485	508,957	434,439	332,313	267,354
New Orleans	494,537	458,762	387,219	339,075	287,104	242,039	216,090	191,418
Chicago	3,396,808	3,376,438	2,701,705	2,185,283	1,698,575	1,099,850	503,185	298,977
Denver	322,412	287,861	256,491	213,381	133,859	106,713	35,629	4,759
San Francisco	634,536	634,394	506,676	416,912	342,782	298,997	233,959	149,473
Los Angeles	1,504,277	1,238,048	576,673	319,198	102,479	50,395	11,183	5,728
Detroit	1,623,452	1,568,662	993,678	465,766	285,704	205,876	116,340	79,577

VII. IMPORTANT CITIES OF CANADA, MEXICO, CENTRAL AND SOUTH AMERICA, AND THE WEST INDIES WITH NUMBER OF POPULATION

Capital cities are marked with an asterisk (*). † Legal capital.

*Asunción	Paraguay	130,067
Bahía Blanca	Argentina	103,968
Barranquilla	Colombia	183,500
Belém	Brazil	293,036
*Belize	Br. Hon.	16,687
Bello Horizonte	Brazil	167,712
*Bogotá	Colombia	395,300
*Buenos Aires	Argentina	2,620,827
Calgary	Canada	88,904
Cali	Colombia	121,300
Camagüey	Cuba	138,295
*Caracas	Venezuela	269,030
*Cayenne	Fr. Guiana	11,704
Córdoba	Argentina	287,598
Curityba	Brazil	116,632
Fortaleza	Brazil	143,277
Guadalajara	Mexico	227,733
*Guatemala	Guatemala	176,780
Guayaquil	Ecuador	159,937
*Georgetown	Br. Guiana	74,145
*Havana	Cuba	568,913
Hamilton	Canada	166,337
Holguine	Cuba	140,854
João Pessoa	Brazil	101,280
*Kingston	Jamaica	109,056
*La Paz	Bolivia	301,000
La Plata	Argentina	252,650
*Lima	Peru	522,826
Maceio	Brazil	129,105
*Managua	Nicaragua	124,357
Maracaibo	Venezuela	132,547
Medellín	Colombia	198,100
Mendoza	Argentina	103,879
*Mexico	Mexico	1,468,422
*Montevideo	Uruguay	770,000
Monterrey	Mexico	125,099
Montreal	Canada	903,007
*Ottawa	Canada	154,951
*Panama	Panama	111,893
*Paramaribo	Surinam	60,723
Ponce	P. R.	105,116
*Port-au-Prince	Haiti	115,000
*Port of Spain	Trinidad	105,195
Pôrto Alegre	Brazil	321,628
Quebec	Canada	150,757
*Quito	Ecuador	150,374
Recife	Brazil	472,764
*Rio de Janeiro	Brazil	1,711,466
Rosario	Argentina	522,403
Santa Fé	Argentina	154,173
*San José	Costa Rica	77,182
*San Juan	P. R.	169,247
*San Salvador	El Salvador	105,193
São Salvador	Brazil	363,726
*Santiago	Chile	639,546
Santiago de Cuba	Cuba	107,125
Santo Domingo	Dom. Rep.	71,297
São Paulo	Brazil	1,120,405
†Sucre	Bolivia	30,000
*Tegucigalpa	Honduras	65,000
Toronto	Canada	667,457
Valparaiso	Chile	215,614
Vancouver	Canada	275,353
Winnipeg	Canada	221,960

Source: Statesman's Year-Book, 1946.

ABOUT THE NORTHEASTERN STATES

Total Value of Fisheries (thousand dollars)	All Cattle including Milk Cows (thousands)	Milk Cows (thousands)	Pig Iron Production from blast furnaces (thousand tons)	Total Value of Minerals (thousand dollars)	Total Value Added by Manufacturing (thousand dollars)	Cotton Spindles (thousands)	Wood Pulp (tons)	**Northeastern States**
3,309	214	122	......	896	152,423	607	1,103,770	Maine
62	115	70	......	653	105,188	289	....	New Hampshire
......	433	290	......	5,348	57,941	......	15,694	Vermont
12,148	193	137	......	5,230	1,188,319	2,835	......	Massachusetts
1,217	178	128	......	2,917	692,187	518	......	Connecticut
1,248	29	23	......	828	238,289	843	......	Rhode Island
3,234	2,142	1,428	4,040	40,278	3,341,895	291	504,857	New York
214	1,560	906	18,064	458,038	2,489,129	......	243,632	Pennsylvania
2,844	213	154	......	14,124	1,524,114	......	31,701	New Jersey

CITIES FROM 1790 TO THE PRESENT TIME

1860	1850	1840	1830	1820	1810	1800	1790	
315,098	314,120	291,948	280,652	235,981	217,895	154,465	85,425	Vermont
2,339,511	1,980,329	1,519,467	937,903	581,434	230,760	45,365	....	Ohio
1,711,951	851,470	476,183	157,445	55,211	12,282	....	....	Illinois
674,913	192,214	43,112	....	....	....	....	....	Iowa
107,206	....	....	....	....	....	....	....	Kansas
4,837	....	....	....	....	....	....	....	North and South Dakota
34,277	....	....	....	....	....	....	....	Colorado
379,994	92,597	....	....	....	....	....	....	California
1,057,286	906,185	691,392	516,823	340,989	252,433	162,686	82,548	Georgia
964,201	771,623	590,756	309,527	127,901	....	....	....	Alabama
791,305	606,526	375,651	136,621	75,448	40,352	8,850	....	Mississippi
177,840	136,881	93,383	61,392	43,298	33,787	24,937	18,320	Boston
1,174,779	696,115	391,114	242,278	152,056	119,734	79,216	49,401	New York City
565,529	121,376	93,665	80,462	63,802	53,722	41,220	28,522	Philadelphia
212,418	169,054	102,313	80,620	62,738	46,555	26,514	13,503	Baltimore
168,675	116,375	102,193	46,082	27,176	17,242	....	....	New Orleans
109,260	29,963	4,470	....	....	....	....	....	Chicago
....	....	....	....	....	....	....	....	Denver
56,802	34,776	....	....	....	....	....	....	San Francisco
4,385	1,610	....	....	....	....	....	....	Los Angeles
45,619	21,019	9,102	2,222	1,422	....	....	....	Detroit

VIII. CITIES IN THE UNITED STATES, 120,000 AND OVER

City	Population 1940
New York, N. Y	7,454,995
Chicago, Ill	3,396,808
Philadelphia, Pa	1,931,334
Detroit, Mich	1,623,452
Los Angeles, Calif	1,504,277
Cleveland, Ohio	878,336
Baltimore, Md	859,100
St. Louis, Mo	816,048
Boston, Mass	770,816
Pittsburgh, Pa	671,659
Washington, D. C	663,091
San Francisco, Calif	634,536
Milwaukee, Wis	587,472
Buffalo, N. Y	575,901
New Orleans, La	494,537
Minneapolis, Minn	492,370
Cincinnati, Ohio	455,610
Newark, N. J	429,760
Kansas City, Mo	399,178
Indianapolis, Ind	386,972
Houston, Texas	384,514
Seattle, Wash	368,302
Rochester, N. Y	324,975
Denver, Colo	322,412
Louisville, Ky	319,077
Columbus, Ohio	306,087
Portland, Oreg	305,394
Atlanta, Ga	302,288
Oakland, Calif	302,163
Jersey City, N. J	301,173
Dallas, Texas	294,734
Memphis, Tenn	292,942
St. Paul, Minn	287,736
Toledo, Ohio	282,349
Birmingham, Ala	267,583
San Antonio, Texas	253,854
Providence, R. I	253,504
Akron, Ohio	244,791
Omaha, Nebr	223,844
Dayton, Ohio	210,718
Syracuse, N. Y	205,967
Oklahoma City, Okla	204,424
San Diego, Calif	203,341
Worcester, Mass	193,694
Richmond, Va	193,042
Fort Worth, Texas	177,662
Jacksonville, Fla	173,065
Miami, Fla	172,172
Youngstown, Ohio	167,720
Nashville, Tenn	167,402
Hartford, Conn	166,267
Grand Rapids, Mich	164,292
Long Beach, Calif	164,271
New Haven, Conn	160,605
Des Moines, Iowa	159,819
Flint, Mich	151,543
Salt Lake City, Utah	149,934
Springfield, Mass	149,554
Bridgeport, Conn	147,121
Norfolk, Va	144,332
Yonkers, N. Y	142,598
Tulsa, Okla	142,157
Scranton, Pa	140,404
Paterson, N. J	139,656
Albany, N. Y	130,577
Chattanooga, Tenn	128,163
Trenton, N. J	124,697
Spokane, Wash	122,001
Kansas City, Kans	121,458

IX. AREA AND POPULATION OF THE STATES OF THE UNITED STATES, THE OCCUPATIONS OF THEIR PEOPLE, and THE VALUE OF THEIR CROPS AND MANUFACTURED PRODUCTS. Dates of admission to the Union are given in the first column. Value of all farm crops expressed in millions of dollars. Amounts of $500,000 and over are counted as $1,000,000.

State	Land Area, Sq. Miles	Population per Sq. Mile, 1940	Population 1940 in Thousands	Population 1930 in Thousands	Distribution of Persons Over 10 Years of Age in Gainful Occupations				Farm Value of Principal Crops (Million dollars)	Value of Manufactured Products (Million dollars)
						Percentage of Total for Each Occupational Class				
					Total Persons Occupied, in Thousands	Agriculture, Forestry, Fishing, and Animal Husbandry	Manufacturing and Mechanical Industries	Extraction of Minerals		
Alabama (1819)	51,078	55.5	2,832	2,646	1,026	49	18	3	165	364.3
Arizona (1912)	113,580	4.4	499	435	165	24	21	9	31	55.9
Arkansas (1836)	52,725	37.0	1,949	1,854	668	59	12	1	157	122.4
California (1850)	156,803	44.1	6,907	5,677	2,501	18	26	2	428	2,159.4
Colorado (1876)	103,967	10.8	1,123	1,035	403	27	19	4	96	176.6
Connecticut (1789)	4,899	348.9	1,709	1,606	677	6	46	..	22	906.4
Delaware (1789)	1,978	134.7	266	238	98	18	34	..	12	86.5
District of Columbia[1]	61	10,870.3	663	486	244	..	19	..	..	74.0
Florida (1845)	54,262	35.0	1,897	1,468	599	24	24	..	85	162.7
Georgia (1789)	58,518	53.4	3,123	2,908	1,162	43	20	..	191	523.3
Idaho (1890)	82,808	6.3	524	445	162	44	16	3	77	67.5
Illinois (1818)	55,947	141.2	7,897	7,630	3,185	11	33	2	368	3,818.2
Indiana (1816)	36,205	94.7	3,427	3,238	1,251	20	35	2	200	1,672.6
Iowa (1846)	55,986	45.3	2,538	2,470	913	36	19	1	365	586.0
Kansas (1861)	82,113	21.9	1,801	1,880	694	33	19	2	181	468.7
Kentucky (1792)	40,109	70.9	2,845	2,614	907	40	18	7	132	470.9
Louisiana (1812)	45,177	52.3	2,363	2,101	816	38	19	1	135	436.2
Maine (1820)	31,040	27.3	847	797	309	20	37	1	52	274.9
Maryland (1789)	9,887	184.2	1,821	1,631	673	13	33	1	54	757.9
Massachusetts (1789)	7,907	545.9	4,316	4,249	1,814	4	43	..	24	2,095.4
Michigan (1837)	57,022	92.2	5,256	4,842	1,927	14	41	1	174	4,020.9
Minnesota (1858)	80,009	34.9	2,792	2,563	993	31	21	1	249	765.7
Mississippi (1817)	47,420	46.1	2,183	2,009	845	67	10	..	226	121.9
Missouri (1821)	69,270	54.6	3,784	3,629	1,458	26	25	1	151	1,205.9
Montana (1889)	146,316	3.8	559	537	216	38	16	7	45	124.8
Nebraska (1867)	76,653	17.2	1,315	1,377	507	39	16	..	136	255.4
Nevada (1864)	109,802	1.0	110	91	43	21	19	12	5	15.9
New Hampshire (1789)	9,024	54.5	491	465	193	13	46	..	9	209.4
New Jersey (1789)	7,522	553.1	4,160	4,041	1,712	4	40	..	45	2,439.4
New Mexico (1912)	121,511	4.4	531	423	143	42	11	6	21	15.3
New York (1789)	47,929	281.2	13,479	12,588	5,523	5	34	..	161	6,094.4
North Carolina (1789)	49,142	72.7	3,571	3,170	1,141	45	26	..	253	1,112.0
North Dakota (1889)	70,054	9.2	641	680	240	56	9	1	51	42.9
Ohio (1803)	41,122	168.0	6,907	6,646	2,616	12	38	2	238	3,685.4
Oklahoma (1907)	69,283	33.7	2,336	2,396	828	37	17	5	94	282.7
Oregon (1859)	96,350	11.3	1,089	953	410	25	26	1	70	265.4
Pennsylvania (1789)	45,045	219.8	9,900	9,631	3,722	7	38	8	177	4,291.8
Rhode Island (1789)	1,058	674.2	713	687	297	3	51	..	3	418.9
South Carolina (1789)	30,594	62.1	1,899	1,738	688	51	22	..	132	301.0
South Dakota (1889)	76,536	8.4	642	692	248	53	11	1	38	56.3
Tennessee (1796)	41,961	69.5	2,915	2,616	958	40	21	2	140	531.3
Texas (1845)	263,644	24.3	6,414	5,824	2,207	38	18	2	384	1,072.6
Utah (1896)	82,346	6.7	550	507	170	24	22	6	24	115.9
Vermont (1791)	9,278	38.7	359	359	141	28	29	2	20	82.7
Virginia (1789)	39,899	67.1	2,677	2,421	880	32	24	2	107	719.9
Washington (1889)	66,977	25.9	1,736	1,563	665	21	28	1	109	478.4
West Virginia (1863)	24,090	79.0	1,901	1,729	570	22	23	19	30	373.3
Wisconsin (1848)	54,715	57.3	3,137	2,939	1,130	26	32	..	197	1,334.9
Wyoming (1890)	97,506	2.6	250	225	92	34	16	7	22	45.3
United States (Continental)	2,977,128	44.2	131,669	122,775	48,830	21.9	28.9	2.0	6,085	45,759.8

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[1] Federal District, created in 1791.

X. ELEVATION, LOCATION, AND POPULATION OF CERTAIN CITIES OF THE UNITED STATES AND ITS POSSESSIONS HAVING A POPULATION OF 20,000 OR OVER, INCLUDING THE CAPITAL AND LARGEST CITY OF EACH STATE. POPULATION FOR 1930 IS LISTED IN THOUSANDS.

	Alt.	N.°	W.°	1940	1930
Aberdeen, Wash	10	47.0	123.9	18,800	21
Abilene, Tex	1,719	32.5	99.9	26,600	23
Agana, Guam	25	13.5	144.7	10,000	8
Akron, Ohio	1,080	41.0	81.5	244,700	255
Alameda, Calif	262	37.7	122.7	36,200	35
Albany, N. Y	140	42.7	73.8	130,500	127
Albuquerque, N. M	4,954	35.1	107.4	35,449	26
Alexandria, La	77	31.3	92.5	27,066	23
Alexandria, Va	33	38.8	77.0	33,500	24
Alhambra, Calif	456	34.1	118.1	38,900	29
Aliquippa, Pa	751	40.6	80.2	27,000	27
Allentown, Pa	321	40.6	75.5	96,900	92
Alliance, Ohio	1,040	40.9	81.1	22,400	23
Alton, Ill	578	38.8	90.1	31,200	30
Altoona, Pa	1,181	40.5	78.4	80,200	82
Amarillo, Tex	3,667	35.2	101.7	51,600	43
Ambridge, Pa	740	40.6	80.2	18,900	20
Amsterdam, N. Y	276	42.9	74.1	33,300	34
Anderson, Ind	874	40.1	85.8	41,500	39
Annapolis, Md	23	38.9	76.6	13,000	12
Ann Arbor, Mich	843	42.3	83.7	29,800	26
Anniston, Ala	709	33.7	85.8	25,500	22
Ansonia, Conn	31	41.3	73.1	19,200	19
Appleton, Wis	790	44.3	88.4	28,400	25
Arlington, Mass	46	42.2	71.1	40,000	36
Asheville, N. C	2,208	35.5	82.5	51,300	50
Ashtabula, Ohio	700	41.8	81.9	21,400	23
Ashland, Ky	537	38.5	82.7	29,537	29
Atlanta, Ga	1,050	33.7	84.4	302,200	270
Atlantic City, N. J	10	39.4	74.4	64,000	66
Attleboro, Mass	137	41.9	71.3	22,000	21
Auburn, N. Y	709	42.9	76.5	35,700	36
Augusta, Ga	134	33.4	82.0	65,900	60
Augusta, Me	153	44.3	69.7	19,300	17
Aurora, Ill	647	41.7	88.2	47,100	46
Austin, Tex	502	30.1	92.7	87,900	53
Bakersfield, Calif	400	35.4	119.0	29,200	26
Baltimore, Md	70	39.3	76.6	859,100	804
Bangor, Me	24	44.8	68.8	29,800	28
Barberton, Ohio	968	41.0	81.5	24,000	23
Baton Rouge, La	60	30.4	91.1	34,700	30
Battle Creek, Mich	824	42.2	85.2	43,400	43
Bay City, Mich	586	43.5	83.8	47,900	47
Bayonne, N. J	10	40.6	74.1	79,100	88
Beaumont, Tex	24	30.0	94.2	59,000	57
Belleville, Ill	480	38.5	90.0	28,400	28
Belleville, N. J	264	40.8	74.1	28,100	26
Bellingham, Wash	100	48.6	122.5	29,300	30
Belmont, Mass	39	42.2	71.2	26,800	21
Beloit, Wis	743	42.5	89.0	25,300	23
Belvedere, Calif	91	37.5	122.2	37,192	33
Berkeley, Calif	600	37.8	122.3	85,500	82
Berlin, N. H	1,013	44.5	71.2	19,000	20
Berwyn, Ill	615	41.8	87.8	48,400	47
Bessemer, Ala	512	33.4	87.0	22,800	20
Bethlehem, Pa	300	40.6	75.4	58,400	57
Beverly, Mass	100	42.6	70.8	25,500	25
Beverly Hills, Calif	400	34.4	118.2	26,800	17
Binghamton, N. Y	866	42.1	75.9	78,300	76
Birmingham, Ala	610	35.5	86.8	267,500	259
Bismarck, N. D	1,672	46.7	100.9	15,400	11
Bloomfield, N. J	182	40.7	74.2	41,600	38
Bloomington, Ill	830	40.5	89.0	32,800	30
Boise, Idaho	2,700	43.6	116.3	26,100	21
Boston, Mass	100	42.3	71.1	770,800	781
Bradford, Pa	859	42.0	78.7	17,600	19
Bridgeport, Conn	40	41.2	73.2	147,100	146
Bristol, Conn	400	41.6	72.9	30,100	28
Brockton, Mass	130	42.1	71.0	62,300	63
Brookline, Mass	200	42.3	71.1	49,700	47
Brownsville, Tex	33	25.9	97.4	22,000	22
Buffalo, N. Y	572	42.9	78.9	575,900	573
Burlington, Iowa	542	40.8	91.1	25,800	26
Burlington, Vt	109	44.5	73.3	27,600	24
Butler, Pa	1,077	40.8	79.8	24,400	23
Butte, Mont	5,769	46	112.5	37,000	39
Cambridge, Mass	140	42.4	71.1	110,800	113
Camden, N. J	31	39.9	75.1	117,500	118
Canton, Ohio	1,080	40.7	81.4	108,400	104
Carbondale, Pa	1,069	41.6	75.5	19,300	20
Carson City, Nev	4,678	39.1	119.5	2,400	1
Cedar Rapids, Iowa	732	42.0	91.6	62,100	56
Central Falls, R. I	100	41.9	71.4	25,200	25
Champaign, Ill	738	40.2	88.2	23,300	20
Charleston, S. C	15	32.8	80.0	71,200	62
Charleston, W. Va	601	38.4	81.7	67,900	60
Charlotte, N. C	759	35.2	80.8	100,800	82
Chattanooga, Tenn	693	35.0	85.2	128,100	119
Chelsea, Mass	100	42.4	71.0	41,200	45
Chester, Pa	40	39.8	75.4	59,200	59
Cheyenne, Wyo	6,060	41.2	104.8	22,400	17
Chicago, Ill	598	41.8	87.6	3,396,800	3,376
Chicago Heights, Ill	684	41.5	87.6	22,400	22
Chicopee, Mass	180	42.2	72.6	41,600	43
Cicero, Ill	...	41.8	87.7	64,700	66
Cincinnati, Ohio	553	39.1	84.5	455,600	451
Clarksburg, W. Va	1,007	39.3	80.4	30,500	28
Cleveland, Ohio	669	41.4	81.8	878,300	900
Cleveland Heights, Ohio	900	41.5	81.7	54,900	50
Clifton, N. J	66	40.7	74.1	48,800	46
Clinton, Iowa	590	41.8	90.2	26,300	25
Cohoes, N. Y	192	42.7	73.8	21,900	23
Colorado Springs, Colo.	5,982	38.8	104.8	36,700	33
Columbia, S. C	315	33.9	81.0	62,300	51
Columbus, Ga	250	32.4	84.9	53,200	43
Columbus, Ohio	780	40.0	83.0	306,000	290
Concord, N. H	228	43.2	71.6	27,100	25
Corpus Christi, Tex	35	27.8	97.4	57,300	27
Council Bluffs, Iowa	994	41.2	95.8	41,400	42
Covington, Ky	513	39.0	84.4	62,000	65
Cranston, R. I	80	41.8	71.4	47,000	42
Cumberland, Md	687	39.7	78.8	39,400	37
Cuyahoga Falls, Ohio	1,005	41.3	81.5	20,500	19
Dallas, Tex	434	32.6	96.8	294,700	260
Danbury, Conn	371	41.4	73.5	22,300	22
Danville, Ill	603	40.1	87.6	36,900	36
Danville, Va	408	36.5	79.4	32,700	22
Davenport, Iowa	592	41.5	90.6	66,000	60
Dayton, Ohio	743	39.7	84.2	210,700	200
Dearborn, Mich	604	42.3	83.2	63,500	50
Decatur, Ill	682	39.8	88.9	59,300	57
Denver, Colo	5,278	39.7	105.0	322,400	287
Des Moines, Iowa	807	41.5	93.5	159,800	142
Detroit, Mich	584	42.3	83.0	1,623,400	1,568
Dover, Del	34	39.1	75.6	5,500	4
Dubuque, Iowa	874	42.5	90.7	43,800	41
Duluth, Minn	606	46.9	92.4	101,000	101
Dunmore, Pa	1,000	41.4	75.6	23,000	22
Duquesne, Pa	935	40.4	79.8	20,600	21
Durham, N. C	405	36.0	79.0	60,100	52
East Chicago, Ind	581	41.6	87.5	54,600	54
East Cleveland, Ohio	660	41.4	81.5	39,400	39
East Liverpool, Ohio	731	40.6	81.0	23,500	23
Easton, Pa	364	40.7	75.3	33,500	34
East Orange, N. J	182	40.7	74.2	68,900	68
E. Providence, R. I	100	41.8	71.4	32,100	29
East St. Louis, Ill	414	38.6	90.1	75,600	74
Eau Claire, Wis	797	44.8	91.5	30,700	26
Elgin, Ill	745	42.0	88.2	38,300	35
Elizabeth, N. J	38	40.5	74.3	109,900	114
Elkhart, Ind	754	41.8	86.1	33,400	32
Elmira, N. Y	859	42.1	76.8	45,100	47
El Paso, Tex	3,710	31.9	105.8	96,800	102
Elyria, Ohio	721	41.3	82.1	25,100	25
Enid, Okla	1,247	36.5	97.9	28,081	26
Erie, Pa	800	42.1	80.2	116,900	115

	Alt.	N.°	W.°	1940	1930
Eugene, Oreg	426	44.4	123.8	20,800	18
Evanston, Ill	602	42.0	87.6	65,300	63
Evansville, Ind	394	38.0	87.5	97,062	102
Everett, Mass	100	42.4	71.1	46,700	48
Everett, Wash	150	42.4	122.3	30,224	30
Fairmont, W. Va	883	39.5	80.2	23,100	23
Fall River, Mass	200	42.7	71.1	115,400	115
Fargo, N. D	906	46.9	96.9	32,500	28
Ferndale, Mich	640	42.5	83.2	22,500	20
Fitchburg, Mass	600	42.6	71.8	41,800	40
Flint, Mich	733	43.0	83.6	151,500	156
Fond du Lac, Wis	764	43.8	88.4	27,200	26
Fort Dodge, Iowa	1,011	42.5	94.2	22,900	21
Fort Smith, Ark	448	35.4	94.5	36,500	31
Fort Wayne, Ind	780	41.1	85.1	118,400	114
Fort Worth, Tex	619	32.7	97.2	177,600	163
Framingham, Mass	199	42.3	71.5	23,200	22
Frankfort, Ky	511	38.1	84.5	11,400	11
Freeport, Ill	780	42.3	89.6	22,300	22
Fresno, Calif	290	36.7	119.7	60,600	52
Gadsden, Ala	555	34.0	86.0	36,900	24
Galesburg, Ill	789	40.9	90.4	28,800	28
Galveston, Tex	10	29.3	94.9	60,800	52
Garfield, N. J	60	40.9	74.1	28,000	29
Gary, Ind	581	41.5	87.5	111,700	100
Glendale, Calif	537	34.2	118.3	82,500	62
Gloucester, Mass	80	42.6	70.6	24,000	24
Gloversville, N. Y	798	43.0	74.3	23,300	23
Grand Rapids, Mich	654	43.0	85.6	164,200	168
Granite City, Ill	429	38.7	90.1	22,900	25
Great Falls, Mont	3,332	47.2	111.4	29,900	28
Green Bay, Wis	591	44.5	88.0	46,200	37
Greensboro, N. C	836	36.1	79.8	59,300	53
Greenville, S. C	970	34.8	82.4	34,700	29
Hackensack, N. J	14	40.9	74.1	26,200	24
Hagerstown, Md	522	39.6	77.7	32,400	30
Hamilton, Ohio	605	39.3	84.5	50,500	52
Hammond, Ind	590	41.6	87.5	70,130	64
Hamtramck, Mich	630	42.3	83.0	49,800	56
Hannibal, Mo	489	39.7	91.4	20,800	22
Harrisburg, Pa	357	40.2	76.9	83,800	80
Hartford, Conn	40	41.8	72.7	166,200	164
Haverhill, Mass	100	42.7	71.0	46,700	48
Hazleton, Pa	1,600	41.0	76.0	38,000	36
Helena, Mont	4,111	46.5	112.0	15,000	11
Highland Park, Mich	639	42.3	83.1	50,800	52
High Point, N. C	937	35.9	80.0	38,400	36
Hoboken, N. J	260	40.7	74.0	50,115	59
Holyoke, Mass	200	42.2	72.6	53,700	56
Homestead, Pa	761	40.4	79.9	19,000	20
Honolulu, Hawaii	10	21.4	157.9	179,300	137
Hot Springs, Ark	579	34.3	93.1	21,300	20
Houston, Tex	61	29.7	95.5	384,500	292
Huntington, W. Va	564	38.5	82.5	78,800	75
Huntington Park, Calif.	160	34.0	118.2	28,600	24
Hutchinson, Kans	1,530	38.0	97.9	30,000	27
Indianapolis, Ind	720	39.7	85.1	386,900	364
Inglewood, Calif	116	34.0	118.4	30,100	19
Irondequoit, N. Y	269	43.1	77.3	23,300	18
Irvington, N. J	160	40.7	74.2	55,300	56
Ithaca, N. Y	815	42.4	76.5	19,700	20
Jackson, Mich	947	42.4	84.4	49,600	55
Jackson, Miss	297	32.2	90.0	62,000	48
Jackson, Tenn	425	35.7	88.8	24,300	22
Jacksonville, Fla	11	29.6	81.6	173,000	129
Jamestown, N. Y	1,311	42.1	79.2	42,600	45
Janesville, Wis	803	42.7	89.0	22,900	21
Jefferson City, Mo	627	38.5	92.1	24,200	21
Jersey City, N. J	101	40.7	74.1	301,100	316
Johnson City, Tenn	1,631	36.3	82.4	25,300	25
Johnstown, Pa	1,180	40.3	79.0	66,600	66
Joliet, Ill	545	41.5	88.1	42,300	42
Joplin, Mo	1,008	37.0	94.5	37,100	33
Juneau, Alaska	10	58.4	134.5	5,700	4
Kalamazoo, Mich	793	42.3	85.5	54,000	54
Kankakee, Ill	628	41.1	87.9	22,200	20
Kansas City, Kans	753	39.1	94.7	121,400	121
Kansas City, Mo	766	39.1	94.6	399,100	399
Kearny, N. J	111	40.7	74.2	39,400	40
Kenosha, Wis	607	42.6	88.8	48,700	50
Kingston, N. Y	224	41.9	74.0	28,500	28
Kingston, Pa	545	41.3	75.9	20,600	21
Knoxville, Tenn	932	35.9	84.0	111,500	105
Kokomo, Ind	813	40.5	86.2	33,700	32
Lackawanna, N. Y	600	42.8	78.9	24,000	23
La Crosse, Wis	580	43.8	91.1	42,700	39
Lafayette, Ind	594	40.4	86.9	28,700	26
La Grange, Ga	789	33.0	85.0	21,983	20
Lakeland, Fla	206	28.2	81.5	22,000	18
Lakewood, Ohio	...	41.4	81.8	69,100	70
Lancaster, Pa	367	40.0	76.3	61,300	59
Lansing, Mich	844	42.6	84.5	78,000	78
Laredo, Tex	438	27.4	99.5	39,200	32
Lawrence, Mass	100	42.7	71.1	84,000	85
Lebanon, Pa	474	40.4	76.5	27,200	25
Leominster, Mass	404	42.5	71.7	22,200	21
Lewiston, Me	196	44.1	70.2	38,500	34
Lexington, Ky	947	38.0	84.3	49,300	45
Lima, Ohio	877	40.7	84.1	44,700	42
Lincoln, Nebr	1,140	40.7	96.6	81,900	75
Linden, N. J	26	40.6	74.3	24,100	21
Little Rock, Ark	288	34.7	92.2	88,000	81
Lockport, N. Y	570	43.2	78.7	24,300	23
Logansport, Ind	600	40.5	86.4	20,200	18
Long Beach, Calif	10	33.8	118.1	164,200	142
Lorain, Ohio	959	14.4	82.2	44,100	44
Los Angeles, Calif	339	34.0	118.2	1,504,200	1,238
Louisville, Ky	463	38.2	85.5	319,000	307
Lowell, Mass	140	42.6	71.4	101,300	100
Lubbock, Tex	...	33.6	101.8	31,800	20
Lynchburg, Va	531	37.4	79.2	44,500	40
Lynn, Mass	160	42.4	70.9	98,100	102
McKeesport, Pa	750	40.4	79.8	55,300	54
Macon, Ga	334	32.8	83.6	57,800	58
Madison, Wis	924	43.0	89.4	67,400	57
Malden, Mass	100	42.4	71.1	58,000	58
Manchester, N. H	224	43.0	71.5	77,600	76
Manitowoc, Wis	592	44.1	87.7	24,400	22
Mansfield, Ohio	1,237	40.8	82.5	37,100	33
Maplewood, N. J	140	40.4	74.1	23,100	21
Marion, Ind	810	40.5	85.7	26,700	24
Marion, Ohio	986	40.5	83.1	30,800	31
Mason City, Iowa	1,126	43.1	93.1	27,000	23
Massillon, Ohio	939	40.8	81.4	26,600	26
Mayaguez, Puerto Rico	25	18.2	67.2	50,300	37
Maywood, Ill	632	41.9	87.7	26,600	25
Medford, Mass	20	42.4	71.1	63,000	59
Melrose, Mass	59	42.4	71.1	25,300	23
Memphis, Tenn	274	35.2	90.0	292,900	253
Meriden, Conn	150	40.6	86.2	39,400	38
Meridian, Miss	344	32.2	88.5	35,400	31
Methuen, Mass	105	42.4	71.1	21,800	21
Miami, Fla	15	25.8	80.2	172,100	110
Michigan City, Ind	597	41.7	86.9	26,400	26
Middletown, Conn	40	41.6	72.6	26,400	24
Middletown, N. Y	562	41.4	74.4	21,900	21
Middletown, Ohio	653	39.5	84.3	31,220	29
Milwaukee, Wis	636	43.0	87.9	587,400	578
Minneapolis, Minn	847	45.0	93.1	492,300	464
Mishawaka, Ind	747	41.7	86.2	28,200	28
Mobile, Ala	15	30.6	88.0	78,700	68
Moline, Ill	574	41.4	90.5	34,600	32
Monessen, Pa	762	40.1	79.9	20,200	20
Monroe, La	77	32.5	92.1	28,300	26
Montclair, N. J	241	40.8	74.2	39,800	42
Montgomery, Ala	160	32.4	86.3	78,000	66
Montpelier, Vt	523	44.2	72.6	8,000	7
Mt. Vernon, N. Y	180	40.9	73.8	67,300	61
Muncie, Ind	948	40.2	85.3	49,700	46
Muskegon, Mich	589	43.2	86.1	47,600	41

	Alt.	N.°	W.°	1940	1930
Muskogee, Okla.	612	35.7	95.3	32,300	32
Nanticoke, Pa.	560	41.3	76.1	24,300	26
Nashua, N. H.	168	43.8	71.5	32,900	31
Nashville, Tenn.	497	36.0	86.8	167,400	153
New Albany, Ind.	464	38.2	85.8	25,400	25
Newark, N. J.	235	40.7	74.1	429,700	442
Newark, Ohio	836	40.0	82.5	31,400	30
New Bedford, Mass.	100	41.6	70.9	110,300	112
New Britain, Conn.	300	41.7	72.8	68,600	68
New Brunswick, N. J.	71	40.5	74.5	33,100	34
Newburgh, N. Y.	94	41.5	74.0	31,800	31
New Castle, Pa.	806	41.0	80.2	47,600	48
New Haven, Conn.	40	41.2	72.9	160,600	162
New Kensington, Pa.	775	40.3	79.4	24,000	16
New London, Conn.	100	41.3	72.1	30,400	29
New Orleans, La.	5	29.9	90.1	494,500	458
Newport, Ky.	512	39.0	84.3	30,600	29
Newport, R. I.	100	41.5	71.2	30,500	27
Newport News, Va.	22	36.9	76.5	37,000	34
New Rochelle, N. Y.	100	40.9	73.8	58,400	54
Newton, Mass.	80	42.3	71.2	69,800	65
New York, N. Y.	36	40.8	73.9	7,454,900	6,930
Niagara Falls, N. Y.	603	43.1	79.0	78,000	75
Norfolk, Va.	15	36.8	76.3	144,300	129
Norristown, Pa.	83	40.1	75.4	38,100	35
North Adams, Mass.	800	42.6	73.1	22,200	21
Northampton, Mass.	200	42.3	72.6	24,700	24
North Bergen, N. J.	200	40.4	74.2	39,700	40
North Little Rock, Ark	250	34.8	92.3	21,100	19
Norwalk, Conn.	100	41.4	73.4	39,800	36
Norwich, Conn.	200	41.5	72.1	23,600	23
Norwood, Ohio	600	39.2	84.5	34,000	33
Nutley, N. J.	99	40.8	74.2	21,900	20
Oakland, Calif.	10	37.7	122.2	302,100	284
Oak Park, Ill.	630	41.8	87.8	66,000	63
Ogden, Utah	4,300	41.2	112.0	43,600	40
Oil City, Pa.	1,009	41.4	79.8	20,300	22
Oklahoma City, Okla.	1,199	35.4	97.6	204,400	185
Olean, N. Y.	1,452	42.1	78.4	21,500	21
Olympia, Wash.	10	47.0	122.9	13,200	11
Omaha, Nebr.	1,040	41.2	96.0	223,800	214
Orange, N. J.	220	40.7	74.3	35,700	35
Orlando, Fla.	111	28.6	81.4	36,700	27
Oshkosh, Wis.	755	44.0	88.5	39,000	40
Oswego, N. Y.	295	43.4	76.5	22,000	22
Ottumwa, Iowa	653	41.0	92.4	31,500	28
Owensboro, Ky.	393	57.9	87.1	30,200	22
Paducah, Ky.	326	37.0	88.6	33,700	33
Pago Pago, American Samoa	10	14.3	170.7	900	7
Parkersburg, W. Va.	615	39.3	81.6	30,100	29
Pasadena, Calif.	...	...	...	81,800	76
Passaic, N. J.	60	40.8	74.1	61,300	62
Paterson, N. J.	180	40.9	74.2	139,600	138
Pawtucket, R. I.	100	41.8	71.3	75,700	77
Peabody, Mass.	19	42.5	70.9	21,700	21
Pensacola, Fla.	39	30.3	87.1	37,400	31
Peoria, Ill.	465	40.6	89.7	105,000	104
Perth Amboy, N. J.	10	40.5	34.3	41,200	43
Petersburg, Va.	88	37.2	77.5	30,600	28
Philadelphia, Pa.	68	39.9	75.2	1,931,300	1,950
Phoenix, Ariz.	1,090	33.4	112.0	65,400	48
Pierre, S. D.	1,490	44.3	100.4	4,322	3
Pine Bluff, Ark.	234	34.2	92.0	21,200	20
Pittsburgh, Pa.	758	40.5	80.0	671,600	669
Pittsfield, Mass.	1,000	42.4	73.2	49,600	49
Plainfield, N. J.	107	40.6	74.4	37,400	34
Pomona, Calif.	861	34.1	117.0	23,500	20
Ponce, Puerto Rico	30	18.0	66.6	65,100	54
Pontiac, Mich.	940	42.6	83.2	66,600	64
Port Arthur, Tex.	10	20.0	94.0	46,100	50
Port Chester, N. Y.	34	41.0	73.6	23,000	22
Port Huron, Mich.	589	43.0	82.5	32,700	31
Portland, Me.	66	43.7	70.2	73,600	70
Portland, Oreg.	54	45.5	122.7	305,300	301
Portsmouth, Ohio	535	38.8	83.0	40,400	42
Portsmouth, Va.	80	36.8	76.4	50,700	45
Pottsville, Pa.	900	40.6	76.2	24,500	24
Poughkeepsie, N. Y.	173	41.8	73.9	40,400	40
Providence, R. I.	10	41.8	71.4	253,500	252
Pueblo, Colo.	4,695	38.2	104.6	52,100	50
Quincy, Ill.	984	40.0	91.3	40,400	39
Quincy, Mass.	100	42.2	71.0	75,800	71
Racine, Wis.	626	42.7	87.9	67,100	67
Raleigh, N. C.	362	35.8	78.8	46,800	37
Reading, Pa.	264	40.3	76.0	110,500	111
Reno, Nev.	4,495	39.1	119.8	21,300	18
Revere, Mass.	180	42.4	71.0	34,400	35
Richmond, Calif.	10	37.9	122.4	23,600	20
Richmond, Ind.	939	39.9	84.9	35,100	32
Richmond, Va.	164	27.5	77.5	193,000	182
Riverside, Calif.	848	34.0	117.4	34,600	29
Roanoke, Va.	925	37.3	80.0	67,200	69
Rochester, Minn.	991	44.0	92.4	26,300	20
Rochester, N. Y.	512	43.2	77.5	324,900	328
Rockford, Ill.	729	42.2	89.0	84,600	85
Rock Island, Ill.	581	41.4	90.6	42,700	37
Rocky Mount, N. C.	129	35.9	77.8	25,500	21
Rome, Ga.	610	34.3	85.2	26,200	21
Rome, N. Y.	460	43.2	78.6	34,200	32
Royal Oak, Mich.	661	42.5	83.2	25,000	22
Sacramento, Calif.	31	38.5	121.5	105,900	93
Saginaw, Mich.	601	43.4	84.0	82,700	80
St. Cloud, Minn.	1,043	45.6	94.1	24,100	21
St. Joseph, Mo.	874	39.7	94.9	75,700	80
St. Louis, Mo.	415	38.5	90.2	816,000	821
St. Paul, Minn.	180	44.9	93.0	287,700	271
St. Petersburg, Fla.	20	27.8	82.6	60,800	40
St. Thomas, (Charlotte Amalie) Virgin Islands	10	18.0	64.7	9,800	7
Salem, Mass.	100	42.5	70.9	41,200	43
Salem, Oreg.	171	44.9	123.0	30,900	26
Salina, Kans.	1,226	38.8	97.6	21,000	20
Salt Lake City, Utah	4,760	40.7	112.0	149,900	140
San Angelo, Tex.	1,847	31.5	100.4	25,800	25
San Antonio, Tex.	661	29.4	98.5	253,800	231
San Bernardino, Calif.	1,049	34.1	117.3	43,600	37
San Diego, Calif.	300	32.7	117.1	203,000	147
Sandusky, Ohio	598	41.3	82.7	24,800	24
San Francisco, Calif.	900	37.8	122.4	634,500	634
San Jose, Calif.	98	37.2	121.9	68,400	57
San Juan, Puerto Rico.	10	18.5	66.1	169,200	114
Santa Ana, Calif.	139	33.8	117.9	31,900	30
Santa Barbara, Calif.	69	34.7	119.7	34,900	33
Santa Fe, N. Mex.	6,850	35.6	106.0	20,300	11
Santa Monica, Calif.	79	34.0	118.2	53,500	37
Savannah, Ga.	20	32.1	81.1	95,900	85
Schenectady, N. Y.	235	42.8	73.9	87,500	95
Scranton, Pa.	744	41.4	75.7	140,400	143
Seattle, Wash.	25	47.5	122.2	368,300	365
Sedalia, Mo.	909	38.6	93.2	20,400	20
Shaker Heights, Ohio	700	41.2	81.3	23,300	17
Shamokin, Pa.	900	40.7	76.6	18,800	20
Sharon, Pa.	356	41.2	80.6	25,600	25
Shawnee, Okla.	1,042	35.3	96.9	22,000	23
Sheboygan, Wis.	589	43.7	87.7	40,600	39
Shenandoah, Pa.	1,300	40.8	76.3	19,700	21
Shreveport, La.	204	32.4	93.8	98,160	76
Sioux City, Iowa	1,106	42.5	96.3	82,300	79
Sioux Falls, S. D.	1,398	43.5	96.9	40,800	33
Somerville, Mass.	100	42.4	71.0	102,100	103
South Bend, Ind.	712	41.8	85.1	101,200	104
Spartanburg, S. C.	878	34.8	82.0	32,200	28
Spokane, Wash.	1,889	47.6	117.6	122,000	115
Springfield, Ill.	598	39.7	89.6	75,500	71
Springfield, Mass.	180	42.1	72.5	149,500	149
Springfield, Mo.	1,300	37.1	93.1	61,200	57
Springfield, Ohio	979	39.9	83.9	70,600	68
Stamford, Conn.	40	41.0	73.5	47,900	46
Steubenville, Ohio	714	40.4	81.0	37,600	35

CITIES OF THE UNITED STATES AND ITS POSSESSIONS, ETC. (Continued)

	Alt.	N.°	W.°	1940	1930
Stockton, Calif	18	37.9	121.2	54,700	47
Stratford, Conn	21	41.8	73.8	22,500	19
Superior, Wis	650	46.7	92.1	35,100	36
Syracuse, N. Y	410	43.0	76.1	205,900	209
Tacoma, Wash	110	47.3	122.4	109,400	106
Tallahassee, Fla	215	30.3	84.3	16,200	10
Tampa, Fla	15	27.9	82.3	108,000	101
Taunton, Mass	80	41.9	71.1	37,300	37
Terre Haute, Ind	485	39.4	87.3	62,600	62
Toledo, Ohio	603	41.6	83.5	282,300	290
Topeka, Kans	928	39.0	95.6	67,800	64
Torrington, Conn	600	41.8	73.1	26,900	26
Trenton, N. J	60	40.2	74.9	124,600	123
Troy, N. Y	200	42.7	74.7	70,500	72
Tucson, Ariz	2,375	32.2	111.0	36,800	32
Tulsa, Okla	711	36.1	96.0	142,100	141
Tuscaloosa, Ala	172	33.2	87.6	27,400	20
Union City, N. J	104	40.6	74.3	56,100	58
University City, Mo	500	38.7	90.3	33,000	25
Utica, N. Y	436	43.1	75.1	100,500	101
Vicksburg, Miss	201	32.3	90.9	24,400	22
Waco, Tex	396	31.5	97.2	55,900	52
Waltham, Mass	80	42.4	71.2	40,000	39
Warren, Ohio	880	41.2	80.9	42,800	41
Warwick, R. I	20	41.4	71.2	28,700	23
Washington, D. C	90	38.9	77.0	663,000	486
Washington, Pa	1,156	40.2	80.2	26,100	24
Waterbury, Conn	500	41.5	73.1	99,300	99
Waterloo, Iowa	852	42.5	92.3	51,700	46
Watertown, Mass	80	42.2	71.1	35,400	34
Watertown, N. Y	478	44.0	75.9	33,300	32
Waukegan, Ill	664	42.4	87.8	34,200	33
Wausau, Wis	1,167	45.0	89.6	27,200	23
Wauwatosa, Wis	654	43.1	88.0	27,700	21
West Allis, Wis	700	43.0	88.0	36,300	34
West Hartford, Conn	146	41.4	72.4	33,700	24
West Haven, Conn	64	41.1	72.5	30,000	25
West New York, N. J	10	40.7	74.0	39,400	37
West Orange, N. J	100	40.8	74.2	25,600	24
West Palm Beach, Fla.	16	26.7	80.1	33,600	26
Weymouth, Mass	30	42.1	70.5	23,800	20
Wheeling, W. Va	678	41.0	80.9	61,000	61
White Plains, N. Y	201	41.0	73.8	40,300	35
Wichita, Kans	1,295	37.7	97.2	114,900	111
Wichita Falls, Tex	951	33.7	98.4	45,100	43
Wilkes-Barre, Pa	580	41.3	76.0	86,200	86
Wilkinsburg, Pa	922	40.4	79.8	29,800	29
Williamsport, Pa	528	41.3	77.1	44,300	45
Wilmington, Del	100	39.7	75.6	112,500	106
Wilmington, N. C	...	34.1	77.5	33,400	32
Winona, Minn	666	44.0	91.6	22,400	20
Winston-Salem, N. C	884	36.1	80.3	79,800	75
Woodbridge, N. J	16	40.3	74.1	27,100	25
Woonsocket, R. I	140	42.0	71.5	49,300	49
Worcester, Mass	600	42.2	71.3	193,600	195
Wyandotte, Mich	585	42.2	83.2	30,600	28
Yakima, Wash	1,065	46.7	120.5	27,200	22
Yonkers, N. Y	300	40.9	73.8	142,500	134
York, Pa	371	39.9	76.6	56,700	55
Youngstown, Ohio	847	41.0	80.8	167,700	170
Zanesville, Ohio	726	31.9	82.0	37,500	36

XI. LUMBER PRODUCTION IN THE UNITED STATES

State	Millions of Board Feet			State	Millions of Board Feet			State	Millions of Board Feet		
	1899	1932	1936		1899	1932	1936		1899	1932	1936
Maine	597	102	232	Michigan	4,300	111	405	Arkansas	538	277	1,077
New Hampshire	277	61	161	Minnesota	1,084	58	123	Louisiana	304	567	1,250
New York	925	39	97	Wisconsin	2,866	120	409	Texas	843	405	942
Pennsylvania	2,133	73	188	Virginia	416	227	567	Idaho	28	248	724
Ohio	565	32	101	North Carolina	515	383	797	Washington	1,064	2,261	4,572
Indiana	755	27	100	South Carolina	199	354	638	Oregon	446	1,604	4,078
Missouri	402	35	81	Georgia	575	264	872	California (includes Nevada)	518	681	1,648
W. Virginia	302	135	336	Florida	412	320	816				
Kentucky	423	51	195	Alabama	589	544	1,153				
Tennessee	460	128	421	Mississippi	454	531	1,261	Total United States	23,843	10,151	24,355

XII. THE EARTH

Diameter of earth at equator (miles)	7,926
Diameter of earth at poles (miles) about	7,900
Earth's surface (square miles)	196,940,000
Total area of oceans (square miles)	141,486,000

XIII. THE CONTINENTS

	Area in Square Miles	Population
Africa	11,650,000	153,000,000
Asia	17,000,000	1,134,000,000
Australia and Larger Islands of the Pacific	3,307,000	10,085,000
Europe	4,354,000	537,000,000
North America	8,990,700	180,590,000
South America	7,151,000	86,113,000
Polar Regions	5,000,000	....

XIV. THE LONGEST RIVERS IN THE WESTERN HEMISPHERE

Name	Country	Length in Miles	Basin Area in sq. mi.
Missouri-Mississippi	United States	4,200	1,250,000
Amazon	South America	4,000	2,500,000
Paraná-Plata	South America	2,300	1,250,000
Mackenzie	Canada	2,400	440,000
Yukon	Alaska	2,050	440,000
St. Lawrence	North America	2,000	350,000

XV. METROPOLITAN DISTRICTS OF THE UNITED STATES. The plan for metropolitan districts used for the 1940 census is to include cities with 50,000 or more population; in addition to the central city, all minor divisions or suburbs having a population of 150 or more per square mile are included. The metropolitan district is not a political unit. It is an area including all the thickly settled territory in and around a city or group of cities.

METROPOLITAN DISTRICT	Population	Land Area in square miles	Population per square mile
Total (140 districts)	62,965,773	44,626.0	1,411.0
Akron, Ohio	349,705	253.3	1,380.6
Albany-Schenectady-Troy, N. Y.	431,575	463.5	931.1
Albany	130,577	19.0	6,872.5
Schenectady	87,549	10.2	8,583.2
Troy	70,304	9.3	7,559.6
Allentown-Bethlehem-Easton, Pa	325,142	340.6	954.6
Allentown	96,904	15.7	6,172.2
Bethlehem	58,490	17.5	3,342.3
Easton	33,589	3.6	9,330.3
Altoona, Pa	114,094	133.5	854.6
Amarillo, Tex	53,463	33.4	1,600.7
Asheville, N. C	76,324	134.0	569.6
Atlanta, Ga	442,294	257.5	1,717.6
Atlantic City, N. J	100,096	56.2	1,781.1
Augusta, Ga	87,809	187.2	469.1
Austin, Tex	106,193	705.2	150.6
Baltimore, Md	1,046,692	577.1	1,813.7
Beaumont-Port Arthur, Tex	138,608	235.9	587.6
Beaumont	59,061	10.4	5,678.9
Port Arthur	46,140	9.4	4,908.5
Binghamton, N. Y	145,156	182.9	793.6
Birmingham, Ala	407,851	347.6	1,173.3
Boston, Mass	2,350,514	1,062.3	2,212.7
Bridgeport, Conn	216,621	171.5	1,263.1
Buffalo-Niagara, N. Y	857,719	473.4	1,811.8
Buffalo	575,901	39.4	14,616.8
Niagara Falls	78,029	12.7	6,144.0
Canton, Ohio	200,352	245.7	815.4
Cedar Rapids, Iowa	73,219	239.0	306.4
Charleston, S. C	98,711	143.3	688.8
Charleston, W. Va	136,332	281.6	484.1
Charlotte, N. C	112,986	47.0	2,404.0
Chattanooga, Tenn	193,215	531.8	363.3
Chicago, Ill	4,499,126	1,184.2	3,799.3
Cincinnati, Ohio	789,309	521.9	1,512.4
Cleveland, Ohio	1,214,943	336.2	3,613.8
Columbia, S. C	89,555	123.2	726.9
Columbus, Ga	92,478	185.5	498.5
Columbus, Ohio	365,796	219.8	1,644.2
Corpus Christi, Tex	70,677	295.7	239.0
Dallas, Tex	376,548	549.8	684.9
Davenport, Iowa-Rock Island-Moline, Ill	174,995	129.2	1,354.5
Davenport	66,039	18.1	3,648.6
Rock Island	42,775	9.1	4,700.5
Moline	34,608	6.9	5,015.7
Dayton, Ohio	271,513	194.8	1,393.8
Decatur, Ill	65,764	27.5	2,391.4
Denver, Colo	384,372	341.0	1,127.2
Des Moines, Iowa	183,973	210.2	875.2
Detroit, Mich	2,295,867	856.3	2,681.1
Duluth, Minn.-Superior, Wis	157,098	458.4	342.7
Duluth	101,065	62.3	1,622.2
Superior	35,136	36.6	960.0
Durham, N. C	69,683	106.4	654.9
El Paso, Tex	115,801	95.1	1,217.7
Erie, Pa	134,039	88.5	1,514.6
Evansville, Ind	141,614	176.8	801.0
Fall River-New Bedford, Mass	272,648	310.3	878.7
Fall River	115,428	33.9	3,405.0
New Bedford	110,341	19.1	5,777.0
Flint, Mich	188,554	144.5	1,304.9
Fort Wayne, Ind	134,385	141.1	952.4
Fort Worth, Tex	207,677	287.3	722.9
Fresno, Calif	97,504	164.6	592.4
Galveston, Tex	71,677	130.4	549.7
Grand Rapids, Mich	209,873	142.9	1,468.7
Greensboro, N. C	73,055	72.2	1,011.8
Hamilton-Middletown, Ohio	112,686	225.2	500.4
Hamilton	50,592	6.6	7,665.5
Middletown	31,220	5.3	5,890.6
Harrisburg, Pa	173,367	130.1	1,332.6
Hartford-New Britain, Conn	502,193	578.6	867.9
Hartford	166,267	17.4	9,555.6
New Britain	68,685	13.7	5,013.5
Houston, Tex	510,397	1,024.3	498.3
Huntington, W. Va.-Ashland, Ky	170,979	255.0	670.5
Huntington	78,836	12.6	6,256.8
Ashland	29,537	8.0	3,692.1
Indianapolis, Ind	455,357	315.8	1,441.9
Jackson, Miss	88,003	436.3	201.7
Jacksonville, Fla	195,619	242.2	807.7
Johnstown, Pa	151,781	215.7	703.7
Kalamazoo, Mich	77,213	73.3	1,053.4
Kansas City, Mo.-Kansas City, Kans	634,093	500.4	1,267.2
Kansas City, Mo	399,178	58.6	6,811.9
Kansas City, Kans	121,458	19.2	6,325.9
Knoxville, Tenn	151,829	200.9	755.7
Lancaster, Pa	132,027	234.0	564.2
Lansing, Mich	110,356	108.1	1,020.9
Lincoln, Nebr	88,191	110.7	796.7
Little Rock, Ark	126,724	114.0	1,111.6
Los Angeles, Calif	2,904,596	1,540.8	1,885.1
Louisville, Ky	434,408	454.4	956.0
Lowell-Lawrence-Haverhill, Mass	334,969	294.0	1,139.4
Lowell	101,389	12.9	7,859.6
Lawrence	84,323	6.7	12,585.5
Haverhill	46,752	32.0	1,461.0
Macon, Ga	74,830	93.4	801.2
Madison, Wis	78,349	52.7	1,486.7
Manchester, N. H	81,932	69.7	1,175.5
Memphis, Tenn	332,477	288.2	1,153.6
Miami, Fla	250,537	164.0	1,527.7
Milwaukee, Wis	790,336	250.3	3,157.6
Minneapolis-St. Paul, Minn	911,077	528.0	1,725.5
Minneapolis	492,370	53.8	9,151.9
St. Paul	287,736	52.2	5,512.2
Mobile, Ala	114,906	88.5	1,298.4
Montgomery, Ala	93,697	163.2	574.1
Nashville, Tenn	241,769	315.9	765.3
New Haven, Conn	308,228	242.3	1,272.1
New Orleans, La	540,030	333.8	1,617.8
New York-Northeastern New Jersey	11,690,520	2,560.9	4,565.0
New York Division	8,707,666	1,364.6	6,381.1
New Jersey Division	2,982,854	1,196.3	2,493.4
Elizabeth	109,912	11.7	9,394.2
Jersey City	301,173	14.3	21,061.0
Newark	429,760	23.6	18,210.2
Paterson	139,656	8.1	17,241.5
Norfolk-Portsmouth-Newport News, Va	330,396	441.9	747.7
Norfolk	144,332	28.2	5,118.2
Portsmouth	50,745	6.2	8,184.7
Newport News	37,067	3.7	10,018.1
Oklahoma City, Okla	221,229	175.9	1,257.7
Omaha, Nebr.-Council Bluffs, Iowa	287,698	199.0	1,445.7
Omaha	223,844	38.9	5,754.3
Council Bluffs	41,439	15.3	2,708.4

METROPOLITAN DISTRICTS OF THE UNITED STATES (Continued)

Metropolitan District	Population	Land Area in square miles	Population per square mile
Peoria, Ill.	162,566	109.0	1,491.4
Philadelphia, Pa.	2,898,644	1,021.3	2,838.2
Phoenix, Ariz.	121,828	132.1	922.2
Pittsburgh, Pa.	1,994,060	1,624.5	1,227.5
Portland, Me.	106,566	95.3	1,118.2
Portland, Oreg.	406,406	307.4	1,322.1
Providence, R. I.	711,500	505.3	1,408.1
Pueblo, Colo.	62,039	71.9	862.9
Racine-Kenosha, Wis.	135,075	188.5	716.6
Racine	67,195	8.7	7,723.6
Kenosha	48,765	7.6	6,416.4
Reading, Pa.	175,355	162.2	1,081.1
Richmond, Va.	245,674	303.9	808.4
Roanoke, Va.	110,593	240.5	459.8
Rochester, N. Y.	411,970	305.9	1,346.7
Rockford, Ill.	105,259	143.7	732.5
Sacramento, Calif.	158,999	469.2	338.9
Saginaw-Bay City, Mich.	153,388	162.1	946.3
Saginaw	82,794	16.6	4,987.6
Bay City	47,956	9.6	4,995.4
St. Joseph, Mo.	86,991	108.8	799.5
St. Louis, Mo.	1,367,977	956.0	1,430.9
Salt Lake City, Utah	204,488	451.0	453.4
San Antonio, Tex.	319,010	466.3	684.1
San Diego, Calif.	256,368	520.4	492.6
San Francisco-Oakland, Calif.	1,428,525	1,002.9	1,424.4
San Francisco	634,536	44.6	14,227.3
Oakland	302,163	52.8	5,722.8
San Jose, Calif.	129,367	242.1	534.4
Savannah, Ga.	117,970	441.1	267.4
Scranton-Wilkes-Barre, Pa.	629,581	385.5	1,633.2
Scranton	140,404	19.4	7,237.3
Wilkes-Barre	86,236	6.9	12,498.0
Seattle, Wash.	452,639	216.3	2,092.6
Shreveport, La.	112,225	48.4	2,318.7

Metropolitan District	Population	Land Area in square miles	Population per square mile
Sioux City, Iowa	87,791	60.8	1,443.9
South Bend, Ind.	147,022	155.6	944.9
Spokane, Wash.	141,370	278.8	507.1
Springfield, Ill.	89,484	69.2	1,293.1
Springfield, Mo.	70,514	88.2	799.5
Springfield, Ohio	77,406	52.8	1,466.0
Springfield-Holyoke, Mass.	394,623	529.2	745.7
Springfield	149,554	31.7	4,717.8
Holyoke	53,750	21.0	2,559.5
Stockton, Calif.	79,337	255.7	310.3
Syracuse, N. Y.	258,352	226.5	1,140.6
Tacoma, Wash.	156,018	184.2	847.0
Tampa-St. Petersburg, Fla.	209,693	262.8	797.9
Tampa	108,391	19.0	5,704.8
St. Petersburg	60,812	52.2	1,165.0
Terre Haute, Ind.	83,370	104.9	794.8
Toledo, Ohio	341,663	204.1	1,674.0
Topeka, Kans.	77,749	43.1	1,803.9
Trenton, N. J.	200,128	159.7	1,253.1
Tulsa, Okla.	188,562	386.4	488.0
Utica-Rome, N. Y.	197,128	394.3	499.9
Utica	100,518	15.8	6,361.9
Rome	34,214	77.1	443.8
Waco, Tex.	71,114	220.5	322.5
Washington, D. C.	907,816	520.0	1,745.8
Waterbury, Conn.	144,822	203.0	713.4
Waterloo, Iowa	67,050	95.5	702.1
Wheeling, W. Va.	196,340	420.0	467.5
Wichita, Kans.	127,308	141.8	897.8
Wilmington, Del.	188,974	248.3	761.1
Winston-Salem, N. C.	109,833	177.7	618.1
Worcester, Mass.	306,194	396.2	772.8
York, Pa.	92,627	92.6	1,000.3
Youngstown, Ohio	372,428	353.7	1,052.9

XVI. IMPORTANT STATISTICAL INFORMATION ON CANADIAN PROVINCES AND TERRITORIES

Province or Territory (1)	Land Area Sq. Miles	Population (1941)	Capitals and Leading Cities	Population (1941)
Alberta	248,800	796,169	Edmonton*	93,817
			Calgary	88,904
British Columbia	359,279	817,861	Victoria*	44,068
			Vancouver	275,353
Manitoba	219,723	729,744	Winnipeg*	221,960
			St. Boniface	18,157
New Brunswick	27,473	457,401	Fredericton*	10,062
			St. John	51,741
Nova Scotia	20,743	577,962	Halifax*	70,488
			Sydney	28,305
Ontario	363,282	3,787,655	Toronto*	677,457
			Hamilton	166,337
			London	78,264
			Windsor	105,311
Prince Edward	2,184	95,047	Charlottetown*	14,821
Quebec	523,860	3,331,882	Quebec*	150,757
			Hull	32,947
			Montreal	903,007
			Ottawa	154,951
			Three Rivers	42,007
			Verdun	67,349
Saskatchewan	237,975	895,992	Regina*	58,245
			Saskatoon	43,027
Northwest Territories	1,253,438	12,028		
Yukon Territory	205,346	4,914		

* Denotes capital

(1) Statistical data from Encyclopedia Britannica

XVII. IMPORTANT STATISTICAL INFORMATION ON LATIN AMERICAN COUNTRIES

Country (1)	Land Area Sq. Miles	Population	Capitals and Leading Cities	Population
Argentina	1,079,965	14,130,871	Buenos Aires*	2,608,333
			Rosario	521,210
			Córdoba	339,375
Bolivia	419,470	3,533,900	La Paz*	301,000
			Cochabamba	80,000
			Sucre*	32,000
Brazil	3,286,170	45,300,000	Rio de Janeiro*	1,951,900
			São Paulo	1,380,000
			Recife	421,918
			Bahía	291,500
British Guiana	89,480	364,694	Georgetown*	73,171
British Honduras	8,598	63,390	Belize*	18,188
British West Indies (including Bermuda)	12,536	2,394,000	Kingston*	109,056
			Port of Spain*	92,368
			Nassau*	20,000
Chile	286,323	5,237,000	Santiago*	952,075
			Valparaiso	212,072
			Concepción	85,938
Colombia	438,825	10,702,000	Bogotá*	425,240
			Medellín	198,100
			Barranquilla	197,830
			Cali	130,180
Costa Rica	23,000	725,149	San José*	77,182
			Limón	10,033
Cuba	44,217	4,779,000	Havana*	659,883
			Santiago de Cuba	152,000
Dominican Republic	19,129	1,999,000	Ciudad Trujillo*	131,271
			Santiago	54,113
Ecuador	103,415	3,171,367	Quito*	165,924
			Guayaquil	172,948
El Salvador	13,176	1,896,000	San Salvador*	110,435
			Santa Ana	47,631
French Guiana	34,740	37,000	Cayenne*	11,704
Guatemala	42,042	3,547,000	Guatemala City*	225,000
Haiti	10,695	3,500,000	Port-au-Prince*	125,000
Honduras	59,145	1,201,310	Tegucigalpa*	55,715
			San Pedro Sula	22,116
Mexico	767,168	21,673,000	Mexico City*	1,464,566
			Guadalajara	228,049
			Monterrey	180,942
Netherlands Guiana (Surinam)	55,212	192,000	Paramaribo*	60,723
Nicaragua	57,143	1,049,000	Managua*	87,620
			Leon	31,799
Panama	33,667	677,983	Panama City*	111,893
			Colon	44,393
Paraguay	154,165	1,108,040	Asunción*	172,400
Peru	482,133	7,396,000	Lima*	628,821
			Callao	84,438
			Arequipa	79,185
Uruguay	72,172	2,203,000	Montevideo*	747,665
Venezuela	352,143	3,851,000	Caracas*	269,930
			Maracaibo	135,582

* Denotes capital

(1) Statistical data from Encyclopedia Britannica; Statesman's Yearbook; South American Handbook.

XVIII. PRINCIPAL EXPORTS AND IMPORTS OF LATIN AMERICAN COUNTRIES

Country	Exports[1]	Imports
Argentina	chilled and frozen meats, hides, wool, dairy products, wheat, corn, linseed, quebracho extract, tungsten	coffee, tea, oranges, bananas, tobacco, textiles, chemicals, paper, fuels, machinery
Bolivia	tin, tungsten, antimony, gold, silver	textiles, sugar, petroleum products, wheat
Brazil	coffee, cotton textiles, raw cotton, meat	machinery, wheat, petroleum products, chemicals
British Guiana	sugar, rice, oil, copra, bauxite	machinery, flour, oils, cotton manufactures
British Honduras	mahogany, coconuts, grapefruit, chicle, bananas	oils, wheat, flour, milk, cotton piece goods
British West Indies (including Bermuda)	cacao, petroleum, bananas, sugar, fruits, sisal, sponge, molasses, rum	iron and steel manufactures, cotton manufactures, fertilizer, lumber
Chile	copper, nitrates, gold, silver, sulphur, hemp, rice, hides, beans, meat	brown sugar, cattle, raw cotton, wool and cotton textiles, coffee, machinery
Colombia	coffee, gold, petroleum, platinum	textiles, chemicals, machinery, cotton
Costa Rica	coffee, bananas, cacao, gold	fuel, textiles, iron and steel manufactures, foodstuffs
Cuba	sugar, tobacco, copper, iron, chromium, fruits and vegetables	manufactured products
Dominican Republic	sugar, cacao, coffee, tapioca, rice, molasses, tobacco	cotton manufactures, jute bags, iron and steel manufactures, chemicals
Ecuador	rice, cacao, rubber, balsa wood	wheat flour, lard, cotton
El Salvador	coffee, sugar, tobacco, indigo, henequen, lumber, rice, balsam, hides	cottons, hardware, flour, drugs, chemical products
French Guiana	gold, marble, rosewood oil, sugar, cacao, spices, hides	manufactured products
Guatemala	coffee, bananas, chicle, essential oils	textiles, motor vehicles, petroleum, paper products
Haiti	coffee, sisal, sugar, cotton, bananas, cacao	textiles, soap, iron and steel
Honduras	bananas, silver, gold, coffee, livestock	foodstuffs, cotton machinery
Mexico	copper, petroleum, lead, zinc, mercury, antimony, gold, silver, cattle, cotton, cloth, coffee, chicle	wheat, machinery, vehicles, vegetables, paper, animal products
Netherlands Guiana (Surinam)	sugar, rum, rice, bauxite	manufactured articles, meat, foodstuffs, oil
Nicaragua	gold, coffee, rubber, cotton	cotton goods, oils, drugs, chemicals, machinery
Panama	bananas, cacao, hides, rubber, coconuts	textiles, foodstuffs, machinery, vehicles, metal, tobacco
Paraguay	quebracho extract, canned meat, hides, cotton yerba maté, tobacco	foodstuffs, seeds, cotton and manufactures, metals and manufactures
Peru	petroleum, sugar, copper, gold, silver, cotton, flax	textiles, foodstuffs, machinery, vehicles, chemicals
Uruguay	meat and extracts, wool, hides, linseed	fuel products, sugar, yerba maté, silk
Venezuela	petroleum, coffee, gold, cacao, cattle	textiles, foodstuffs, machinery, manufactured metals

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[1] Information from Encyclopedia Britannica; Pan American Yearbook; Statesman's Yearbook; South American Handbook.

Index and Glossary

An index and glossary section is included in this book to help you in three ways—

1. The subjects are listed alphabetically, with their page numbers, to tell you where to find things in the book. Illustration references are written in italics.
2. The words are marked to help you pronounce them correctly.
3. The meanings or identifications of the words are given to help you understand their use in geography, (except for cities in the United States).
4. Capital cities of the United States are marked *.

The key listed below will show you how to pronounce words in "Neighbors in the Americas." The marked letters follow the same plan as the pronunciation keys in The Winston Dictionary for Schools and in The Winston Dictionary, Advanced Edition.

Pronunciation Key

ā	hāy, Cāpe Māy	ĭ	hemĭsphere, Afrĭca	o͝o	fo͝ot, Hollywo͝od
ā̇	vā̇cation, Dā̇ytona	ṅ	——, Belé*m*	**ou**	m**ou**ntain, S**ou**th America
â	râre, Delawâre	ō	ōcean, Great Smōky	**g**	**g**ully, **G**ary
ă	măp, Ălăbama	ō̇	pō̇tato, Iō̇wa	**j**	a**g**e, **G**eor**g**ia
ȧ	grȧss, Frȧnce	ô	côrn, Baltimôre	**j**	**j**ade, **J**amestown
ȧ	b*ȧ*nan*ȧ*, Ȧlask*ȧ*	*ô*	d*ô*g, B*ô*ston	**y**	**y**esterday, Hol**y**oke
ä	bärn, Ärctic	ŏ	hŏt, Cŏlorado	**ng**	lo**ng**, You**ng**stown
ă̊	locă̊l, Arkă̊nsas	ū	latitūde, Cūba	**ch**	ran**ch**, Man**ch**ester
ē	ēven, Clēveland	ū̇	ū̇nite, Ū̇nited States	**sh**	**sh**ip, **Sh**asta
ē̇	dē̇gree, Dē̇troit	û	fûr, Bûrlington	**th**	nor**th**, Fort Wor**th**
ĕ	dĕlta, Tĕnnessee	ŭ	gŭlf, Bŭffalo	**th**	Nor**th**ern, Ne**th**erlands
ĕ̊	channĕ̊l, Hobokĕ̊n	ŭ̊	walrŭ̊s, Columbŭ̊s	**hw**	**wh**ale, **Wh**ite Mts.
ẽ	resẽrvoir, Chestẽr	**oi**	s**oi**l, High P**oi**nt	**z**	**z**eal, New **Z**ealand
ī	īceberg, Carlīsle	o͞o	zo͞o, Alto͞ona	**zh**	mea**s**ure, A**s**ia

Some single letters always have the same pronunciation in English. These letters are b, d, f, h, k, l, m, n, p, r, s, t, v, w, and z. The letters c, g, and x are not used to show pronunciation.

A

Aconcagua (ä'kō̇n-kä'gwä), mountain in N.W. Argentina, S.A.; 313
Adirondacks (ăd'ĭ-rŏn'dăkz), group of mountains in N.E. New York State; 205, 212
Africa (ăf'rĭ-k*ȧ*), continent; southern land mass of Eastern Hemisphere; 5, 166, 235, 250, 266, 302
Akron, Ohio (ăk'rŭ̊n); 99, 178, 198, 222
Alabama (ăl'*ȧ*-bă'm*ȧ*), state in southern U.S., 23, 67, *129*, 131, 138, 140, 142, 144, 146, 155, 157–159
Alaska (*ȧ*-lăs'k*ȧ*), territory in N.A. belonging to U.S.; 1, 4, 9–17, *15*, 19, *24*, 46, 86, 110, 111, 195, 254, 282, 337
Albany, N.Y.* (ôl'b*ȧ*-nĭ); 151, 236, 237
Alberta (ăl-bûr't*ȧ*), Prairie Province in western Canada; *18*, *24*, 35–39, *35*, *39*
Aleutian (*ȧ*-lū'shă̊n), group of islands west of Alaska; 11–14, 282
Allegheny (ăl'ē̇-gā'nĭ), mountains—ranges of Appalachian system; 264. plateau—region of land, part of Allegheny Mts.; 144, 145
Allentown, Pa. (ăl'ĕn-toun); 239, 240

alluvial (ȧ-lū′vĭ-ȧl), land composed of mud or other material deposited by running water; 157, 158
altiplano (äl′tē-plä′nō), high plateau of western Bolivia, S.A.; 331, 332
Altoona, Pa. (ăl-tōō′nȧ); 242
Amarillo, Tex. (ăm′ȧ-rĭl′ō); 146
Amazon (ăm′ȧ-zŏn), largest river in world, from Peruvian Andes to Atlantic Ocean in S.A.; 282, 283, 286, 290, 292, 293, 307–*309*, 329, 332, 333
America (ȧ-mĕr′ĭ-kȧ), continents of Western Hemisphere; 49, 64, 70, 218, 238, 263, 270, 281, 301, 330
Amsterdam, N. Y. (ăm′stẽr-dăm); 236
Andes (ăn′dēz), chain of mountains from Panama to Cape Horn, S.A.; 4, 282, 284, 286–288, 290–292, 294, 295, 313–317, 325–332, *331*, 334–337
Annapolis (ȧ-năp′ō-lĭs), small valley in Nova Scotia, Canada; 24–26, *25*
Annapolis, Md.* (ȧ-năp′ō-lĭs); *126*
Antarctica (ănt-ärk′tĭ-kȧ), continent around South Pole, within Antarctic Circle; 134, 282
Antofagasta (än′tō-fä-gäs′tä), seaport in N. Chile, S.A.; nitrate center; 333, 336
Appalachian (ăp′ȧ-lăch′ĭ-ăn), mountains—group of mountains extending from Gulf of St. Lawrence to central Alaska; 62, 63, *65*, 67, 80, 95, 125, 140, 148, 149, 213, 282, 297. plateau—region of land; 19, 80, 125, 134, 142–144, 149, 169, 205, 241, 291
aqueduct (ăk′wē-dŭkt), bridge-like structure that supports a pipe or artificial channel for conducting water from a distance; *3*, 100
Arctic (ärk′tĭk), region of North Pole; 14, 45, 46
Argentina (är′jĕn-tē′nȧ), republic in S.A.; 2, *2*, 6, 27, 208, 221, 234, 284, *287*, 304, 306, 307, 313–321, *313*, *314*, *320*
Arizona (ăr′ĭ-zō′nȧ), southwestern state of the U.S.; 65, 66, 71, *72*, 76, *78*, 80, 89, 90, 93, 120, 257
Arkansas (är′kăn-sô), river—flowing into the Mississippi; 157. state—south central state of the U.S.; 125, *129*, 149, 150, 157, 159, 160, 161, 188, 230
Aroostook (ȧ-rōōs′to͝ok), river in N. Maine flowing into the St. John River; 208
Aruba (ä-rōō′bä), island off Venezuela, S.A.; 275, 276, 294
Asia (ā′shȧ), largest continent; 16, 21, 38, 45, 107, 134, 152, 166, 235, 269, 283, 308
Asunción (ä-sōōn′syōn′), capital city of Paraguay, S.A.; 321
Atacama (ä′tä-kä′mä), province and desert in Chile, S.A.; 334, 335
Athabaska (ăth′ȧ-băs′kȧ), river in N.W. Canada; 38
Atlanta, Ga.* (ăt-lăn′tȧ); 140, *172*
Atlantic City, N. J. (ăt-lăn′tĭk sĭt′ĭ); 215
Atlantic Ocean (ăt-lăn′tĭk), body of water between America and Europe and Africa; 11, *41*, 42, 50, 52, 62, 66, 83, 111, 125, 126, 128, 130–132, 136, 143, 145, 154, 191, 214, 215, 228, 237, 243, 256, 264, 275, 282, 283, 305, 308, 314, 320, 323, 329, 337
Atrato (ä-trä′tō), river in Colombia, S.A.; 286
Augusta, Ga. (ô-gŭs′tȧ); 132, 139, 167
Augusta, Maine* (ô-gŭs′tȧ); 220
Austin, Tex.* (ôs′tĭn); 11, 157, 162, 164
Australia (ôs-trāl′yȧ), British island and continent S.E. of Asia; 38, 107, 221, 282, 314

B

Bahamas (bȧ-hā′mȧz), group of islands N.E. of Cuba and east of Florida; 126, *250*, 270
Bahía (bä-ē′ä), a state and a city in Brazil, S.A.; 303, 304
Bahía Blanca (bä-ē′ä bläng′kä), city and bay in Argentina, S.A.; 315, 316
Baltimore, Md. (bôl′tĭ-môr); *128*, 130, 133, 134, 137, 144, 146, 271
Barbados (bär-bā′dōz), British island in the West Indies group; *250*, 273
Barranquilla (bär′rän-kē′yä), town and river port of Colombia, S.A.; 287, 288, 290, 291
Baton Rouge, La.* (băt′ŭn rōōzh′); 162
Bay of Fundy (fŭn′dĭ), inlet of Atlantic Ocean between Nova Scotia and New Brunswick, Canada; 24–28, *25*
Belém (bȧ-lĕṅ′), capital of the State of Para in Brazil, S.A.; 310
Bellaire, Ohio (bĕl-âr′); 198
Bering (bē′rĭng), Sea—body of water between Aleutian Islands and Bering Strait; 14. Strait—channel separating Asia and America; 282
Bethlehem, Pa. (bĕth′lē-hĕm); 239, 240
Birmingham, Ala. (bûr′mĭng-ȧm); 145, 162, 169
Bismarck, N.D.* (bĭz′märk); *193*
Black Hills (blăk hĭls), mountains in S.W. South Dakota and N.E. Wyoming; *179*, 182
Blue Ridge (blōō rĭj), easternmost range of Appalachians in Pa., Va., and N.C.; 67, 95, 142, 143, 145
Bogotá (bō′gō-tä′), capital city of Colombia, S.A.; 288–292, *289*, 298
Boise, Idaho* (boi′zȧ); *70*
Bolívar (bō-lē′vär), northern state in Colombia, S.A.; *285*
Bolivia (bō-lĭv′ĭ-ȧ), republic in S.A.; *287*, 288, 295, 317, 324, *324*, 330–334, *333*
Bonneville Dam (bŏn′vĭl′); 111–113
Boston, Mass.* (bôs′tŭn); 50, 130, 154, 186, 212, 215, 219, 221–223, *222*, 225, *237*, 265
boundary (boun′dȧ-rĭ), mark of extent or limit, as a line which bounds a territory on a map; also, the limit itself, as a river between two states; 11, 18, 35, 63, 65
Brattleboro, Vt. (brăt′l-bûr′ō); 225

hāy, vācation, râre, măp, grȧss, bȧnanȧ, bärn, locăl, ēven, dēgree, dĕlta, channĕl, resẽrvoir, īceberg, hemĭsphere, Belém, ōcean, pōtato, côrn, dŏg, hŏt, latitūde, ūnite, fûr, gŭlf, walrŭs, soil, zōō, fo͝ot, mountain, gully, gorge, jade, yesterday, long, ranch, ship, north, northern, whale, zeal, measure

Brazil (brȧ-zĭl′), republic in S.A.; 3–5, 64, 219, 283, 286, *287*, 301–307, *302*, *303*, *305*, 309, *310*, 311, 314, 320, 321, 326, 333

British Columbia (brĭt′ĭsh kō-lŭm′bĭ-ȧ), province of western Canada; 19, *24*, 26, 41–45, *45*, 53, 84

British Empire (ĕm′pīr), community of nations, including Great Britain, Canada, Australia, New Zealand, Union of South Africa and other possessions; 19, 22, 28

British Guiana (gē-ä′nȧ), British colony in northern S.A.; 286, 297–299

British Honduras (hŏn-do͞o′rȧs), British colony in C.A.; 19, 250

Brownsville, Tex. (brounz′vĭl); 156, 163

Buenaventura (bwā′nä-vĕn-to͞o′rȧ), seaport town in Colombia, S.A.; 291, 292

Buenos Aires (bwā′nōs ī′rās), capital city of Argentina, S.A.; 1–4, *1*, *2*, 6, 8, 264, 305, 315–319, *317–319*, 321, 322

Buffalo, N.Y. (bŭf′ȧ-lō); 36, 186, 190, 197, 228–230, 232, 235–237

Burlington, Vt. (bûr′lĭng-tŭn); 225, *237*

C

Calgary (kăl′gȧ-rĭ), commercial city in Alberta, Canada; 37, 38

Cali (kä′lē), town in Colombia, S.A.; 291, 294

California (kăl′ĭ-fôr′nĭ-ȧ), state in U.S. on the Pacific Coast; 11, 41, 65, 66, *67*, 68, 70, 71, *71*, *72*, 76, 79, 82–84, *85*, 86, 89, 93, 94, 96–98, *96*, 101, 104, 106, 107, *107*, 115, 153, 160, 161, 166, 205, 208, 210, 234, 267, 317, 336

Callao (käl-yä′ō), seaport town in Peru, S.A.; 328

Camden, N.J. (kăm′dĕn); 238, 239

campos (käm′po͞os), tropic grasslands, S.A.; 301, *310*, 311

Canada (kăn′ȧ-dȧ), member of the British Empire; country in N.A.; 4, 5, *5*, 11, 18–23, *18*, *19*, *24*, 26, 28–34, 36, 38, *39*, 41, 44, 45, 47, 48, 51, 53, 62, 63, 69, 76, 93, 112, 126, 144, 146, 178, 190, *196*, 222, 229, 230, 236, 244, 250, 255, 260, 273, 274, 283, 291, *302*, 314, 316, 326

canal (kȧ-năl′), man-made water channel, used for either navigation or irrigation; 89, 92, 96, 101, 155, 162, 163, 190, 191, 228, 229, 236, 243, 267, 288, 294, 305

canyon (kăn′yŭn), deep gorge or valley made by a river or stream; 103, 329

Cape Breton (kāp brĭt′ŭn), island, northeastern part of Nova Scotia, Canada; 21, *23*, 24, 25

Cape Cod (kŏd), sandy peninsula between Atlantic Ocean and Cape Cod Bay, Mass.; 66, 208, 214, 223

Cape Horn (hôrn), point of land at the southern tip of Chile, S.A.; 79, 264, 267, 282, 292, 334

Cape May, N. J. (mā); 214

Caracas (kä-rä′käs), capital city of Venezuela, S.A.; 295–298, *295*

Caribbean (kăr′ĭ-bē′ăn), sea, arm of Atlantic Ocean between C.A. and S.A. and the West Indies; 126, 267, 273, 275, 286–288, 294–296, 324

Carson City, Nev.* (kär′sŭn); *70*

Cartagena (kär′tȧ-jē′nȧ), capital of Bolívar, seaport of Colombia, S.A.; *285*, 288, 290, 291

Cascade (kăs-kād′), mountains near Pacific Coast, from N. Calif. to British Columbia; 88, 110, 112, 113, 316

Catskill (kăts′kĭl), group of mountains in New York State, west of Hudson River; 205, 212

Cauca (kou′kä), river in Colombia, S.A.; 286, 290

Cayenne (kā-ĕn′), capital of French Guiana, S.A.; 298

Ceará (sā-ä-rä′), northeast state of Brazil; 311

Central America (sĕn′trăl ȧ-mĕr′ĭ-kȧ), south portion of N.A., between Mexico and S.A.; 64, 222, 249, 250, *250*, 253, 262–268, *263*, 275, 288

Cerro de Pasco (sĕr′rō dā päs′kō), rich silver and copper mining town in Peru, S.A.; 328

channel (chăn′ĕl), long groove or furrow separating two bodies of land; *49*, 111, 129, 139, 148, 163

Charleston, S. C. (chärlz′tŭn); 129, 133–135, 153

Charleston, W. Va.* (chärlz′tŭn); *126*

Chattanooga, Tenn. (chăt′ȧ-no͞o′gȧ); 145, 148

Chesapeake (chĕs′ȧ-pēk), bay in Md. and Va.; 130, 131, 134, 161

Cheyenne, Wyo.* (shī-ĕn′); *70*

Chicago, Ill. (shĭ-kô′gō); 92, 97, 100, 156, 169, 170, 186, 191, 192, 194, 196–198, 232, 234, 236, 243, 270, 275, 304, 318

Chile (chĭl′ē), southwestern republic in S.A.; 2, 4, *5*, 284, *287*, 324, *324*, 326, 330, 333–335, *335–337*

Chincha (chĭn′chä), Pacific Ocean islands off Peru, S. A.; 327

Cincinnati, Ohio (sĭn′sĭ-năt′ĭ); 198

Ciudad Bolívar (syo͞o-däd′ bō-lē′vär), river port and capital of Bolívar State, Venezuela, S.A.; 296

Cleveland, Ohio (klēv′lȧnd); 186, 193, *193*, 194, 198, 243

Coachella (kō′ȧ-chĕl′ȧ), valley in southeastern Calif.; 92, 93

coastal plain (kōs′tȧl plān), level land forming boundary of the sea; 66, 126, 128–133, 136–139, 151, 205, 208

Coast Ranges (kōst rān′jĕz), mountains from S. Calif. through British Columbia, Canada; 68, 103, 106, 107, 110, 337

Colombia (kō-lôm′bē-ä), northwestern republic in S.A.; 284–288, *285–287*, 290–296, 298, 324, 326, 333

Colon (kō-lōn′), seaport town in Panama, C.A.; *253*, 267

Colorado (kŏl′ō-rä′dō), river—famous for its canyons; 71, *88*, 91–93, 96, 101. state—western state in the U.S.; *71*, *72*, 76, 81, 91, 118, 170

Columbia (kō-lŭm′bĭ-ȧ), river of British Columbia, Wash., and Oreg.; 44, 66, 110, 112, 113
Columbia, S.C.* (kō-lŭm′bĭ-ȧ); 139
Columbus, Ohio* (kō-lŭm′bŭs); 199
Concepción (kōn-sĕp-syōn′), coal mining center in Chile, S.A.; 336
Concord, N.H.* (kŏng′kōrd); *206*
Conowingo Dam (kŏn′ō-wĭng′gō); 134
continent (kŏn′tĭ-nĕnt), large division of land on the earth; 5, 19, 36, 66, 83, 99, 134, 282, 283
Continental Shelf (kŏn′tĭ-nĕn′tăl shĕlf), shallow sea bottom near the Atlantic and Gulf shores of the U.S.; 132, 205
Connecticut (kŏ-nĕt′ĭ-kŭt), river—in New England, flows into Long Island Sound; 208, 223–225. state—eastern state of the U.S.; 170, 205, *207*, 208, 217, 223, 224, *231*
Cordillera Oriental (kôr′dĭl-yâr′ȧ ō-rē-ĕn-täl′), eastern ridge of the Andes, S.A.; 286
Córdoba (kôr′dō-vä), city and mountains in Argentina, S.A.; 319
Corn Belt (kôrn bĕlt), section in the middle west of the U.S. where the climate favors the growing of corn; 178, 180–182, *180*, 186, 188, 191, 198, 270, 314
corral (kŏ-răl′), pen or enclosure for horses or cattle; 73
Corumbá (kō′rōōm-bä′), commercial town on Paraguay River, Brazil, S.A.; 333
Costa Rica (kŏs′tä rē′kȧ), republic of C.A.; 250, 262, 264–266
Cotton Belt (kŏt′n bĕlt), section in southern U.S. where the climate favors the growing of cotton; 157–159, 188
Cuba (kū′bȧ), island republic in the West Indies; 4, 126, 134, 154, 159, 160, 234, *250*, 270, 271
Cumberland, Md. (kŭm′bẽr-lănd); 143. gap—pass through Cumberland Plateau, Va., Ky., and Tenn.; 63
Curaçao (kōō′rä-sä′ō), Dutch colony in the West Indies, a group of islands near Venezuela, S.A.; 275, 276, 294
current (kûr′ĕnt), a flow or passing; body of air or water flowing in a certain direction; 21, 49, 52, 292, 327
Cuzco (kōōz′kō), capital city of Cuzco, Peru, S.A.; 330

D

Dallas, Tex. (dăl′ȧs); 157, 163, 166
Danville, Va. (dăn′vĭl); 137, 140
Dawson (dô′sŭn), capital city of the Yukon Territory, Canada; 46, *46*
Death Valley (dĕth văl′ĭ), valley in the desert in southeastern Calif.; *69*, 70, 115, *115*, 120
decentralization (dē-sĕn′trăl-ĭ-zā′shŭn), act of transferring from a central point to outlying points; 193
Delaware (dĕl′ȧ-wâr), middle Atlantic state in the U.S.; 101, 115, 126, *129*, 130, 131, 156, 157. river—flowing between Pa. and N.J. to Delaware Bay; 133, 210, 237–239, *238*
Delmarva Peninsula (dĕl-mär′vȧ pĕn-ĭn′sŭ-lȧ), section of the coastal plain between Chesapeake Bay, the Atlantic Ocean, and Delaware Bay; 130, *135*
delta (dĕl′tȧ), fan-shaped deposit of sand or soil at the mouth of a river; 104, *107*, 258
Denver, Colo.* (dĕn′vẽr); 67, 117, *117*, 118, 140, 197, 308, 319
Des Moines, Iowa* (dē moin′); *178*
Detroit, Mich. (dē-troit′); 99, 156, 186, *190*, 192, 193, 223
District of Columbia (dĭs′trĭkt kō-lŭm′bĭ-ȧ), federal territory of the U.S., where Washington, the national capital, is located; *129*, 139
dock (dŏk), artificial basin or waterway for ships; a wharf; 194, 234, 287, 288, *319*, 323, 324, 327, 328, 331
Dominican Republic (dō-mĭn′ĭ-kăn rē-pŭb′lĭk), republic, East Hispaniola, island in the West Indies; also known as Santo Domingo; 270, 272, 275
Door (dôr), peninsula—thumb of Wisconsin pointing into Lake Michigan; 188
Dover, Del.* (dō′vẽr); *126*
dry farming (drī färm′ĭng), production of crops without irrigation in regions of low rainfall; 182
Duluth, Minn. (dōō-lōōth′); 179, 185, 186, 190, *193*, 194, 229, 243, 335
Durham, N. C. (dûr′ăm); 139
Dust Bowl (dŭst bōl), an area in the southwestern part of the U.S. where land originally covered with grass was planted to wheat and later neglected, so that the dry topsoil was blown away by the wind; 183, *183*

E

Eastern States (ēs′tẽrn stātz), all the states of the U.S. that are near or touch the Atlantic Ocean; 79, 110
Easton, Pa. (ēs′tŭn); 239, 240
Ecuador (ĕk′wȧ-dôr), republic on western coast of S.A. at Equator; *287*, 295, 324–326, *324*, 330
Edmonton (ĕd′mŭn-tŭn), capital city of Province of Alberta, Canada; 38, 46
Edwards Plateau (ĕd′wẽrdz plă-tō′), rough area in Texas that is good pasture land; 166
Elizabeth, N. J. (ē-lĭz′ȧ-bĕth); 208, 235
El Salvador (ĕl săl′vȧ-dôr), republic in C.A.; 250
Equator (ē-kwā′tẽr), imaginary line around the earth, equally distant from the North and South poles; 2, 4, 7, 8, 262, 283, 284, 324, 326, 327
Erie, Pa. (ē′rĭ); 186, *237*, 243
Erie Canal (ē′rĭ kȧ-năl′), waterway connecting Lake Erie and Hudson River; 228, 229, *229*, 232

erosion (ē-rō′zhŭn), gradual eating away; the action of water on rock or soil; 199
estancia (ĕs-tän′syä), cattle ranch in S.A.; *313*, 315
Everglades (ĕv′ēr-glādz), low, swampy tract of land in southern Florida; 151, 153
export (ĕks-pôrt′), goods sold and sent to a foreign country; 25, 31, 33, 36, 133–135, 152, 163, 166, 206, 257, 260, 265, 267, 270, 276, 287, 288, 291, 292, 294–296, 299, 302–304, 306, 316, 325, 327, 328, 331–333, 335, *335*, 337

F

Fairbanks (fâr′băngks), town on Tanan River in Alaska; 1, *1*, 3, 4, 10, 16, *43*
Fall Line (fôl līn), boundary between the ancient rocks of the Appalachian Piedmont and the younger softer rocks of the Atlantic Coastal Plain; 128, 129, 138, 139, 237
Fall River, Mass. (fôl rĭv′ēr); 223, 224
fiord (fyôrd), long, narrow inlet, or arm of the sea, between high banks; 42
Flint, Mich. (flĭnt); 192
Florida (flŏr′ĭ-dȧ), southern state of the U.S.; 2, 62–64, 126, *129*, 132, 151–156, *151*, *154*, 159, 160, 166, 168, 270, 271, 321
Fortaleza (fôr′tä-lā′zȧ), seaport city of Brazil, S.A.; 311
Fort-de-France (fŏr dē fräns), capital of Martinique, French West Indies; *249*
Fort William (wĭl′yăm), city and resort of Ontario, Canada, on Thunder Bay, Lake Superior; 33, 36
Fort Worth, Tex. (wûrth); 157, *168*, 197
France (fråns), republic, western Europe; 52, 63, 66, 178, 218, 274, 299
Frankfort, Ky.* (frăngk′fûrt); *126*
Fraser (frā′zēr), river in British Columbia, flows to Gulf of Georgia; 42–44, *44*
French Guiana (frĕnch gē-ä′nȧ), French colony, north coast of S.A.; 298, 299

G

Galapagos (gä-la′pä-gōs), Pacific island group, on Equator off coast of Ecuador; 326
Galveston, Tex. (găl′vĕs-tŭn); 162, 163, 166
gap (găp), opening; passage; pass in a mountain ridge; 63, 66
Gary, Ind. (gâr′ĭ); 186, 191, 192, 230
Gaspé (gås′pā′), peninsula in Quebec, Canada, north of New Brunswick; 32
Genesee (jĕ-nē-sē′), N. Y. river, flows to Lake Ontario; 235, 236
Georgetown (jôrj′toun), capital city of British Guiana; 298
Georgia (jôr′jȧ), southeastern state in the U.S., on the Atlantic Coast; *129*, 130–132, 135, 138, 140, 155, 157–160, 167, 168, 213, 253
Germany (jûr′mȧ-nĭ), country in Europe; 85, 178
Gettysburg, Pa. (gĕt′ĭz-bûrg); 213
glacier (glā′shēr), mass or river of ice, formed in high cold regions, which moves slowly down a mountain until it melts, or else on seacoasts, breaks off into icebergs; 4, 11, 13, *18*, 20, *20*, 42, 46, 53, 178, 184, 188, 220, 336, 337
Glacier National Park (glā′shēr); 316
Gloucester, Mass. (glŏs′tēr); 215, *217*, 219, 221
Gloversville, N. Y. (glŭv′ērz-vĭl); 236
Golden Gate (gōl-dĕn gāt), strait which forms the entrance to San Francisco Bay, Calif; 101, 102, 106
gorge (gôrj), mass of anything which chokes up a channel; a narrow passage, as between mountains, *71*, 329
Gran Chaco (grän chä′kō), central plain of S.A.; Bolivia, Paraguay, and Argentina; 282, 317, 319, 321, 322, 333
Grand Banks (grănd băngkz), shoal in North Atlantic Ocean, off the south and east coast of Newfoundland; famous as a fishing ground; 21, 26, 28, 51, 53, 132, 218, 219
Grand Canyon (kăn′yŭn), deep gorge cut by the Colorado River in northwestern Arizona; 71, *71*, 120
Grand Coulee Dam (kōō′lē); 111, 113
Grand Rapids, Mich. (răp′ĭdz); 199
Great Appalachian Valley (grāt ăp′ȧ-lăch′ĭ-ăn), between the Blue Ridge Mountains and Great Smoky Mountains on the east and the Appalachian Plateau on the west; 142, 145, 147, 205, 210, 239–241
Great Basin (bā′sn), elevated region between Wasatch and Sierra Nevada mountains; 67, 114, 115, 126, 256
Great Divide (dĭ vīd′), chief mountain watershed of the Rocky Mountains; *41*, 42, 66
Great Lakes (lākz), five lakes—Superior, Michigan, Huron, Ontario, and Erie—between Canada and northeastern U.S.; 22, 30, 32, 33, 36, 190–194, 227–229, 232, 234, 236, 243, 283, 286
Great Salt Lake (sôlt), a large salt lake in Utah; 67, 114, 115, 119
Great Slave Lake (slāv), a lake in southern Northwest Territories, Canada; 47
Great Smoky (smōk′ĭ), range of mountains in N.C. and Tenn.; 125, 126, 142, 143, 145, 146
Great Smoky National Park (smōk′ĭ); 149
Great Valley of California (văl ĭ), fertile valley about 500 miles long; 68, 71, 88, 101–104, 106, 107, 109, 336
Greenland (grēn′lănd), large island in the Atlantic Ocean, northeast of Canada, belonging to Denmark; 21, *24*, 49, 52–54, *52*, *53*, 191
Guadalajara (gwä′dä-lä-hä′rä), city, capital of Jalisco, Mexico; 257, 528
Guadeloupe (gwä′dĕ-lōōp′), French colony of the Lesser Antilles, West Indies; 274
Guatemala (gwä′tä-mä′lä), republic in northwestern C.A.; 250, 253, 254, 262, 264, 265, *266*, *268*

Guayaquil (gwī′ä-kēl′), seaport and commercial city in Ecuador, S.A.; *316*, 324–326, 328
Guayas (gwī′äs), river in Ecuador, S.A.; 324
Guianas (gē̇-ä′nȧz), region on northern coast of S.A., between Orinoco and Amazon rivers,which contains British Guiana, Surinam, and French Guiana; 3, 230, 285–287, *286*, 298, 314
gulf (gŭlf), arm of the sea extending into the land, larger than a bay; 324
Gulf Coastal Plain (kōs′tå̆l plān), continuation of the Atlantic Coastal Plain; 155, 156, 160–164, 282
Gulf of Guayaquil (gwī′ä-kēl′), large bay of S.W. Ecuador, touched by Peru; 324, 327
Gulf of Mexico (mĕk′sĭ-kō), on southeast coast of North America; 19, 63, 66, 67, 125, 126, 128, 131, 132, 143, 154, 155, 157, 160, 191, 253–256, 258, 271, 283, *302*
Gulf Stream (strēm), warm ocean current that flows from Gulf of Mexico first northward along the coast of U.S. and then northeastward toward the British Isles; 21, 53, 154
Gulf of St. Lawrence (sānt lô′rĕ̊ns), Atlantic Ocean, between east Canada and Newfoundland; 19, 31, 67
gully (gŭl′ĭ), channel worn by water; narrow ravine; 188

H

Haiti (hā′tĭ), republic occupying the western part of the island of Hispaniola, in the West Indies; 4, *250*, 270, 272, 275, 276
Halifax (hăl′ĭ-făks), capital city of Novia Scotia, Canada; 26, 41
Hampton Roads (hămp′tŭ̊n), channel into Chesapeak Bay, near Fort Monroe, Va.; 134
harbor (här′bẽr), partly sheltered portion of a sea or lake which serves as a port or haven for ships; 91, 99, 134, 163, 172, 193, 194, 221, 222, 230, 232, 237, 238, 255, *271*, 305
Harrisburg, Pa.* (hăr′ĭs-bûrg); 229, *237*, 239, 241
Hartford, Conn.* (härt′fẽrd); *223*, 224, 225
Havana (hȧ-văn′ȧ), capital city of Cuba; *253*, 270, 271
Haverhill, Mass. (hā′vẽr-ĭl); 221, 223
Helena, Mont.* (hĕl′ē̇-nȧ); *70*
hemisphere (hĕm′ĭ-sfẽr), a half of the earth. The Equator divides the earth into the Northern and the Southern hemispheres. A meridian divides the earth into the Eastern and Western hemispheres; 2, 7, *118*, *197*, 227, 267, *274*, 338
highland (hī′lå̆nd), high or mountainous land; 5, 19, 32, 52, 88, 125, 142, 145, 146, 148, 165
High Point, N. C. (hī point); 141
Himalaya (hĭ-mä′lȧ-yȧ), mountain range between India and Tibet, highest range in the world; 283
Hispaniola (hĭs′på̆n-yō′lȧ), island in the West Indies; formerly Haiti; 270–272
Hoboken, N. J. (hō′bō-kĕn); 234
Holyoke, Mass. (hōl′yōk); 225
Hollywood, Calif. (hŏl′ĭ-wo͝od′); 97
Honduras (hŏn-do͞o′rȧs), republic in C.A.; 250, 262, 263, 266, 267
Hood (ho͝od), river in northern Oregon; 112
Hoover Dam (ho͞o′vẽr), formerly known as Boulder Dam; *88*, 92, 101, 113
Hot Springs National Park (hŏt sprĭngz); 149, 150
Houston, Tex. (hūs′tŭ̊n); 162, 163, 304
Hudson (hŭd′sn), bay—large bay in northeastern Canada; 36, 47. river—in N.Y., rising in the Adirondack Mts. and flowing into N. Y. Bay; 100, 230, 232, 234, 235, 237
Humboldt (hŭm′bōlt), current—river of cool water that flows in the ocean along the west coast of S.A.; 327. river—in North Nev., flowing to Humboldt Lake; 114

I

iceberg (īs′bûrg′), mass of ice broken from a glacier and floating in the sea, often rising to a great height above the water; *49*, 52, 53
Iceland (īs′lå̆nd), island in the North Atlantic, west of Norway; 21, *24*, 49, 52, *52*, *53*, 54–56, 61
Idaho (ī′dȧ-hō), northwestern state in the U.S.; 66, *72*, 76, 114
Illinois (ĭl′ĭ-noi′), north central state of the U.S.; 157, 179, 180, 189, 190, 192, 193, 195, 198, 253, 260
Imperial (ĭm-pē′rĭ-ăl), valley in Calif., mostly below sea level; 71, 88, 91, 92, 104
import (ĭm-pôrt′), goods brought from a foreign country, especially for commercial purposes; 164, 295, 304, 311, 333, 337
Indiana (ĭn′dĭ-å̆n′ȧ), north central state of the U.S.; 179, 180, *189*, 190, 192, 193, 198, 199
Indianapolis, Ind.* (ĭn′dĭ-å̆n-ăp′ō̇-lĭs); 198, 199
Indian Ocean (ĭn′dĭ-å̆n), an ocean lying south of Asia and east of Africa; 220
Iowa (ī′ō̇-wȧ), north central state of the U.S.; 180, *180*, 189, 190, 315
Iquique (ē̇-kē′kå̆), seaport town of Chile, S.A.; 336
Iquitos (ē̇-kē′tōs), city of Peru, S.A.; 283, 308, 329
irrigation (ĭr′ĭ-gā′shŭ̊n), furnishing of a water supply, by ditches or canals, to land under cultivation; 3, 37, 43, 44, 76, 77, 85, 88–93, 96, 102–104, 112–114, 119, 155, 156, 166, 183, 184, 256, 257, 260, 266, 272, 288, 293, 315, 316, 327, 330, 334, 336
isthmus (ĭs′mŭ̊s), neck of land connecting two larger bodies of land; 24, 267
Italy (ĭt′ȧ-lĭ), republic of southern Europe; 178, 302

J

Jackson, Miss.* (jăk′sŭ̊n); 169
Jamaica (jȧ-mā′kȧ), British island in the West Indies, southeast of Cuba; *250*, 266, 269, 273

James (jāmz), river flowing through Va. into Chesapeake Bay; 128, 134, 137

Japan (jȧ-păn′), island empire off the eastern coast of Asia; 45, 178

Jefferson City, Mo.* (jĕf′ẽr-sŭn); *178*

Jersey City, N. J. (jûr′zĭ sĭt′ĭ); 234

João Pessoa (zhŏŏ-ouṅ pĕ-sō′ȧ), seaport city of Brazil, S.A.; 302

Johnstown, Pa. (jŏnz′toun); 242

Juneau (jōō′nō), port and capital city of Alaska; 10–12, *13*, *43*

jungle (jŭng′gl), any tract of land overrun with dense, tangled vegetation, usually tropical; 253, 297, 298, 326, 332, 333

K

Kansas (kăn′zȧs), central state of the U.S.; 180, 182–184, *189*, 271, 320

Kansas City, Kans. (kăn′zȧs sĭt′ĭ); 198

Kansas City, Mo. (kăn′zȧs sĭt′ĭ); 156, 197, 198, 271

Kentucky (kĕn-tŭk′ĭ), south central state of the U.S.; 63, 80, *129*, 138, 144, 146, 210

Ketchikan (kĕch′ĭ-kăn′), seaport town in Alaska; 12

Keweenaw (kē′wḗ-nô), peninsula—upper finger of land in Michigan; 185

Knoxville, Tenn. (nŏks′vĭl); 145, 148, *148*

L

Labrador (lăb′rȧ-dôr), current—from the Arctic Ocean moving southward along the north part of the east coast of N. A.; 53, 327. country—dependency of Newfoundland on the extreme eastern coast of Canada; 19, 21, *24*, 49, 51, *51*, 52

Lackawanna, N. Y. (lăk′ȧ-wŏn′ȧ); 230

La Dorada (lä dṓ-rä′dȧ), town in Colombia, S.A.; 290

lagoon (lȧ-gōōn′), shallow lake or channel, usually near the sea and connected with it; 205

La Guaira (lä gwä′ḗ-rȧ), seaport in Venezuela, S.A.; 295, 296

Lake Erie (lāk ē′rĭ), one of the Great Lakes drained by St. Lawrence River, between U.S. and Canada; 30, 33, 188, 190, 193, 208, 228, 331

Lake Huron (hū′rŏn), one of the Great Lakes of N.A., connecting Lake Superior with Lake Erie; 30, 33

Lake Maracaibo (mä′rä-kī′bō), northwest Venezuela, S.A.; 283, 286, 293, *293*, 294. city—on Lake Maracaibo; *293*, 294

Lake Michigan (mĭsh′ĭ-găn), one of the Great Lakes between Mich. and Wis.; 100, 188, 191, 192

Lake Okeechobee (ō-kḗ-chō′bē), southern part of central Fla.; 153, 159

Lake Ontario (ŏn-târ′ĭ-ō), one of the Great Lakes of N.A., between Canada and New York State; 30, 31, 33, 190, 208, 228, 235

Lake Superior (sū-pḗ′rĭ-ẽr), largest of the Great Lakes of N.A.; largest body of fresh water in the world; 33, 185, 186, 190

Lake Titicaca (tē′tḗ-kä′kä), boundary between Bolivia and Peru, S.A.; 283, 330, 331

Lake Winnipeg (wĭn′ĭ-pĕg), Manitoba province, Canada; 35

Lancaster, Pa. (lăng′kȧs-tẽr); 234, 241

Lansing, Mich.* (lăn′sĭng); *178*

La Paz (lä päs′), city situated on the altiplano in Bolivia, S.A.; 331, 332

latitude (lăt′ĭ-tūd), distance north or south of the Equator measured in degrees; 7, 8, 336

Laurentian Plateau (lô-rĕn′shĭ-ăn), fairly level, rocky, tree-covered land about 1500 feet above sea level; 19, 20, 31, 38, 46

Lebanon, Pa. (lĕb′ȧ-nŏn); 239, 241

Lehigh (lē′hī), river in east Pa., flowing into the Delaware River at Easton, Pa.; 210, 238, 240. valley—the Great Appalachian Valley near the Delaware River in Pa.; 210, 240

Lesser Antilles (lĕs′ẽr ăn-tĭl′ēz), chain of small islands southeast of the Greater Antilles, in the West Indies; 273, 275

Lexington, Ky. (lĕk′sĭng-tŭn); 146, 147

Lima (lē′mä), capital city of Peru, S.A.; *323*, 326, 328–330

Lincoln, Nebr.* (lĭng′kŭn); *178*

Little Rock, Ark.* (lĭt′l rŏk); 157

llanos (lä′nōz), broad, grassy plain in the valley of the Orinoco River; 282, 286, 292–294, 296, *297*, 311, 333

Long Beach, Calif. (lông bēch); 99

Long Island (lông ī′lănd), island southeast of New York City, part of the State of New York; 208, 215, 233

longitude (lŏn′jĭ-tūd), distance east or west on the earth's surface, measured in degrees, from the meridian of Greenwich, England; 8

Los Angeles, Calif. (lŏs ăng′gĕl-ḗs); 3, 71, 83, 86, 95–98, 100, *289*

Louisiana (lōō-ē′zĭ-ăn′ȧ), southern state of the U.S., on the Gulf of Mexico; 63, 64, 66, *129*, 155, 157–162, 210, 294, 322

Louisville, Ky. (lōō′ĭ-vĭl); *146*, 148

lowland (lō′lănd), low, level country; 83, 95, 97

M

Mackenzie (mȧ-kĕn′zĭ), river in northwestern Canada, flowing into the Arctic Ocean; 19, 47, 283

Madison, Wis.* (măd′ĭ-sŭn); *178*

Magallanes (mä-gäl-yä′nās), province on the Strait of Magellan, exports wool and frozen mutton from Punta Arenas; 337

Magdalena (mäg-dä-lā′nä), river in south Colombia, S.A., flows to Caribbean Sea; 283, 286–288, 290, 291, 298
Maine (mān), state in northeastern U.S.; 26, 52, 64, 114, 205, *205*, 207–209, *207*, 213, 215, 216, 220, 225, 299
Manáos (mä-nä′ōs), trading post for the Amazon Valley, Brazil, S.A.; 308–310, *309*, *316*, 329
Manhattan, N. Y. (măn-hăt′ăn), a borough of New York City on the island of Manhattan at the mouth of the Hudson River; 232–234, 238
Manitoba (măn′ĭ-tō′bȧ), province in south central Canada; 24, 35–38, *38*
Margarita (mär-gȧ-rē′tȧ), island off the coast of Venezuela, S.A.; 297
Maritime Provinces (măr′ĭ-tīm), provinces of Canada that border on the sea; Nova Scotia, Prince Edward Island, and New Brunswick; 23, 24, 28
Maryland (mĕr′ĭ-lănd), state in the U.S.; 126, *129*, 130–134, 139, 142–144, 146, 160, 208, 239
Massachusetts (măs′ȧ-cho͞o′sĕts), state on the North Atlantic Coast of the U.S.; 101, 205, 207, 208, 217, 223, 224, 252, 294
Matanuska (mä-tä-no͞os′kȧ), valley and town in Alaska; 12, 13, 15
Medellín (mā-dhĕl-yēn′), second largest city in Colombia, S.A.; 291, 294
Mediterranean (mĕd′ĭ-tĕ-rā′nē-ăn), an inland sea between Europe and Africa; 97
Mérida (mā′rē-dhä), commercial city in Mexico; 255. city in the mountains of Venezuela, S.A.; 295
Meriden, Conn. (mĕr′ĭ-dĕn); 224
meridian (mē-rĭd′ĭ-ăn), imaginary circle around the earth, passing through the North and South Poles and any given place; 8. prime meridian—a meridian from which longitude is reckoned; 7, 8
Merrimack (mĕr′ĭ-măk), river in N.H. and Mass., to Atlantic Ocean; 221
metropolis (mē-trŏp′ō-lĭs), chief city or capital of a country, state, or region; principal center of population; 37, 296, 318
metropolitan district (mĕt′rō-pŏl′ĭ-tăn), city of 50,000 or more persons and adjacent divisions with 150 persons per square mile; 99–101, *100*, 118, 134, 137, *172*, 191, 206, *222*, 223, 241
Mexico (mĕk′sĭ-kō), republic in N.A., south of the U.S.; 2, 3, *3*, 11, 64–66, 69, 76, 110, 131, 155, 166, 249, 250–260, 262, 264, 265, 275
Mexico City (mĕk′sĭ-kō sĭt′ĭ), capital city in south central Mex.; 2, 3, *3*, 251, *253*, 254–259, *261*, 264
Miami, Fla. (mī-ăm′ĭ); 2–4, *146*, 153, 154, *155*, 287
Michigan (mĭsh′ĭ-găn), state in the north central U.S.; 177–179, 184–188, 192, 194, 199, 223, 230, 243
Middle America (mĭd′l), countries and islands that lie between the U.S. and S.A.; 249, 250
Middle Atlantic States (ăt-lăn′tĭk), states of N.Y., Pa., and N.J.; 205, 227
Milwaukee, Wis. (mĭl-wô′kĭ); 194
Minneapolis, Minn. (mĭn′ē-ăp′ō-lĭs); 156, 196, 197
Minnesota (mĭn′ē-sō′tȧ), state in the north central U.S.; 178–180, 184–188, *189*, 190, 192, 194, 197, 208, 230, 243
Mississippi (mĭs′ĭ-sĭp′ĭ), river—46, 62, 63, 67, 83, 112, 125, 126, 143, 144, 146, 157, 158, *158*, 160, 191, 195–198, 258, 283, 286, 315. state—in southern U.S.; *129*, 155, 157–159, 170. valley—125, 126, 143, 158, 195, 228, 234, 243
Missouri (mĭ-zo͝or′ĭ), state—central U.S.; 179, 180, 188, *189*, 195. river—66, 184, 197, 198
Mohawk Valley (mō′hôk), region in central New York State; 228
Monogahela (mō̇-nông′gȧ-hē′lȧ), river in southwestern Pa.; *209*, 243
Montana (môn-tăn′ȧ), state in northwestern U.S.; *72*, 76, 80, 81, 116, 182, 184
Monterrey (mōn-tĕr-rā′), manufacturing city in north Mexico; 257, 260
Montevideo (mōn′tā̇-vē̇-dā′ō), capital city of Uruguay, S.A.; 320, 321
Montgomery, Ala.* (mŏnt-gŭm′ĕr-ĭ); *126*
Montpelier, Vt.* (mŏnt-pēl′yĕr); *206*
Montreal (mŏnt′rē̇-ôl), chief city of Canada, on the St. Lawrence River; 21, 33, *33*, 34, 36, 41, 43, 190, 237, 243
Mt. Aconcagua (ä-kō̇n-kä′gwä), highest peak in the New World, in the Andes, northeast of Santiago, Chile, S.A.; 282
Mt. Chimborazo (chē̇m-bō̇-rä′zō), mountain peak of the Andes in Ecuador, S.A.; 325
Mt. Cotopaxi (kō̇-tō̇-păk′sē), volcano of the Andes Mts., Ecuador, S.A.; 325
Mt. Hood (ho͝od), peak of Cascades, Oreg.; *113*
Mt. Ixtaccihuatl (ēs-täk-sē′hwät′l), mountain in Mexico, southeast of Mexico City; *251*, 254
Mt. Logan (lō′găn), next to highest mountain in N.A., southwest Yukon Territory, Canada; 11, 46
Mt. McKinley (mȧ-kĭn′lĭ), highest peak in N.A., situated in Alaska; *9*, 11–13, 282
Mt. Mitchell (mĭch′ĕl), highest Appalachian peak, situated in the Black Mountains, N.C.; 143
Mt. Orizaba (ō-rē-zä′bä), highest mountain in Mexico; 254
Mt. Roraima (rō̇-rä-ē′mä), highest peak in The Guianas; 286
Mt. Shasta (shăs′tȧ), volcanic peak in N. Calif.; 101, 109
Mt. Tamalpais (tăm′ăl-pīs′), mountain northwest of San Francisco, Calif.; 106
Mt. Whitney (hwĭt′nĭ), peak in Sierra Nevada range, Calif.; highest mountain in U.S. outside Alaska; *69*, 70, 101, 328
muskeg (mŭsk′ĕg), swamp filled with several feet of dead moss; 29

N

Napa (năp′*ȧ*), small productive valley in the Coast Range of Calif.; 106

Nashua, N.H. (năsh′ů-*ȧ*); 221

Nashville, Tenn.* (năsh′vĭl); 147

Nassau (năs′ô), capital city of the Bahama Islands; 270, *271*

Nebraska (nḗ-brăs′k*ȧ*), middle western state of the U.S.; 182, 184, 190

Nueces (nů-ā′sås), river in south Tex., flows to the Gulf of Mexico; 65

Nevada (nḗ-văd′*ȧ*), western state of the U.S.; 19, 65, *72*, 76, 80

Newark, N. J. (nū′ẽrk); 235

New Bedford, Mass. (bĕd′fẽrd); 224

New Brunswick (brŭnz′wĭk), province in southeastern Canada; 23, 24, *24*, 26–28, *28*

New England (ĭng′glånd), northeastern states of the U.S.—Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, and Connecticut; 26, 85, 132, 134, 140, 144, 193, 205, 212, 213, 215, 217–223, *220*, *222*, 225, 226, 234, 244, 286, 296, 298

Newfoundland (nů-fŭnd′lånd), British island off the eastern coast of Canada; 19, 21, 22, *24*, 25, 31, 49, 50–52, *50*, 67

New Hampshire (hămp′shĭr), northeastern state of the U.S.; 205, 207, 212, 215, 221, 224, 225

New Haven, Conn. (hā′vĕn); 224, 225

New Jersey (jûr′zĭ), eastern state of the U.S., middle Atlantic state; 29, 79, 101, 205, *207*, 208, 210, 212–215, 227, 234, 235, 238, 239, 320, 324

New London, Conn. (lŭn′dŭn); 224

New Mexico (mĕk′sĭ-kō), southwestern state of the U.S.; 65, 70, *72*, 76, 80, 81, 257, 295

New Orleans, La. (ôr′lḗ-ănz); 63, 144, 158, *158*, 162, 163, 166, 169, 191, 198, 258, 304, 318

Newport News, Va. (nū′pōrt nūz); 134

New York (nū yôrk), barge canal—canal system following approximately the old Erie Canal from Buffalo to Troy; 228, 230, 235–237. state—middle Atlantic state of the U.S.; 22, 29, 145, 205, 207, 208–210, 212, 227–230, *231*, 235–237, 244, 296

New York City (yôrk); 1–4, *1*, 36, 45, 50, 97, 100, *107*, 130, 154, 163, 190, 198, *205*, 212, 215, 223, 225, *227*, 228–230, *229*, 232–235, *235*, 237, 238, 240, 264, 267, 270, 273, 283, *289*, 308, 318, 319, 323

New Zealand (nū zē′lånd), British self-governing dominion, island in the S. Pacific, east of Australia; 107, 221

Niagara (nī-ăg′*ȧ*-r*ȧ*), falls—31, 70, 103, 107, 230, 235. river—between Ontario, Canada, and N.Y., from Lake Erie to Lake Ontario; 229, 230

Nicaragua (nĭk′*ȧ*-rä′gw*ȧ*), republic in the central part of C.A.; 250, 262, 265

Nome (nōm), town on the northwestern coast of Alaska, near the mouth of the Yukon River; 11, 16

Norfolk, Va. (nôr′fŭk); 128, 130, 132–134, 139, 144, *146*, *172*, 223

North America (nôrth *ȧ*-mĕr′ĭ-k*ȧ*), continent; the northern half of the Western Hemisphere; 5, 13, 19, 20, *20*, 26, 33, 38, *41*, 42, 46–48, 52, 56, 66, 69, 83, 110, 112, 142, 143, 148, 158, 230, 232, 235, 243, 250, 253, 254, 264, 267, 282–284, 286, 327

North Carolina (nôrth kăr′ō-lī′n*ȧ*), south Atlantic state of the U.S.; 125, *129*, 130–133, 137, 138, 140, 142; 143, 145, 146

North Central States (nôrth sĕn′trål stāts), states of the north central part of the U.S. in the Mississippi Valley north of the Ohio River and the southern boundaries of Mo. and Kans.; 130, 177–180, *177*, *178*, *180*, 184, *189*, 195, 198, 199, 207, 208, 215, *237*, 243, 283

North Dakota (nôrth d*ȧ*-kō′t*ȧ*), northwestern state of the U.S.; 182, 184, 189, 197, 271

Northeastern States (nôrth ēs′tẽrn stāts), states of the northeastern corner of the U.S.; 179, 205–208, *207*, 210, 211, 213, 214, *216*, 219, 241

Northwest Territories (nôrth′wĕst tĕr′ĭ-tôr′ĭz), islands north of the Canadian mainland, Mackenzie, Franklin, and Keewatin; 23, *24*, 46

Norway (nôr′wā), kingdom, the western part of the Scandanavian peninsula, in northwestern Europe; 21, 49, 55, 337

Nova Scotia (nō′v*ȧ* skō′sh*ȧ*), province in southeastern Canada; 23, 24–27, *24*, *25*, 31, 51

O

Oakland, Calif. (ōk′lånd); 106

oasis (ō-ā′sĭs), fertile place in a desert; 119, 184, 334

Ocean City, Md. (ō′shån sĭt′ĭ); 132

Ogden, Utah (ŏg′dĕn); 119

Ohio (ō-hī′ō), north central state in the U.S.; 19, 63, 70, 179, 180, 188, *189*, 193, 194, 198, 210, 234, 293. river—large river of the U.S., flowing from Pittsburgh, Pa., to the Mississippi River; 63, 144, 146, 148, *148*, 188, 195, 198, *209*, 243, 283

Oklahoma (ō′kl*ȧ*-hō′m*ȧ*), south central state of the U.S.; 125, 126, *129*, 149, 155, 160–163, 165, 167, 178, 182, 195, 210

Oklahoma City, Okla.* (ō′kl*ȧ*-hō′m*ȧ* sĭt′ĭ); *126*, 164, 166

Olympia, Wash.* (ō-lĭm′pĭ-*ȧ*); 83

Omaha, Nebr. (ō′m*ȧ*-hô′); 197, 198, 304

Ontario (ŏn-tăr′ĭ-ō), province in southeastern Canada; *24*, 29, *30*, 31, 32, 35, 234

Oregon (ŏr′ē̇-gŏn), northwestern state in the U.S., on the Pacific Coast; 41, 53, 66, 71, *72*, 76, 83, 84, 86, 110–113, *112*, *113*, 264, 336
Orinoco (ôr′ĭ-nō′kō), large river in northern S.A.; 282, 283, 286, 290, 292, 293, 296, 297
Oruro (ō̇-ro͞o′rō), department, also its capital city, in Bolivia, S.A.; 331, 332
Ottawa (ŏt′ȧ-wȧ), capital of Canada, in eastern part of the Province of Ontario; 33
Ouachita (wŏsh′ĭ-tô), mountain ranges in western Ark. and eastern Okla., south of Arkansas River; 149, 150
Ozark (ō′zärk), low range of mountains between the Arkansas and Missouri rivers; 125, 149, 188. plateau—125, 126, 149, 150

P

Pacific Ocean (pȧ-sĭf′ĭk), large body of water between the continents of America, Asia, and Australia; 5, 11, 12, 14, 41, *41*, 42, 44, 45, 66, 68, 71, 76, 83, 84, 86, 87, 96, 106, 107, 111, 191, 253, 256, 263, 267, 271, 282–284, 287, 291, 324, 326, 327, 334, 337
Palm Beach, Fla. (päm bēch′); 153, 154
pampas (păm′pȧz), vast treeless plains in S.A., especially those in Argentina; *281*, 282, 314, 315, 317, 320
Panama (păn′ȧ-mä′), republic in C.A.; 250, 263, 264, 267, 286, 292, 295. canal—33, 45, 111, 267, *267*, 273, 287, 324, 326. city—267, 291
Pará (pä-rä′), state in the lower Amazon Basin, Brazil, S.A.; 308
Paraná (pä-rä-nä′), river in Brazil and Argentina, S.A.; 306, 307, 317, 318, 321, 322
Paraguay (păr′ȧ-gwā), republic in S.A.; *287*, 307, 313, 317, 321, 322. river in S.A., flows to the Paraná; 317, 321
Paricutín (pă-rē′ko͞o-tēn′), volcano in Mexico; 259, *259*
Pasadena, Calif. (păs′ȧ-dē′nȧ); 99
Passaic, N. J. (på-sā′ĭk); 235
Patagonia (păt′ȧ-gō′nĭ-ȧ), region in southern S.A., largely in Argentina; 282, 315, 316, 319, 337
Paterson, N. J. (păt′ẽr-sůn); 235
peninsula (pěn-ĭn′sū-lȧ), body of land almost surrounded by water; 24, 25, 151, 179, 223, 253
Pennsylvania (pĕn′sĭl-vā′nĭ-ȧ), one of the middle Atlantic states of the U.S.; 29, 39, 80, 134, 142, 144, 192–194, 198, 205, *207*, 209, 210, *211*, 212, 214, 215, 223, 227, 229, 230, 234, 236, 238, *239*, 240, 270, 287, 291, 292
Peoria, Ill. (pē̇-ôr′ĭ-ȧ); 196
Peru (pē̇-ro͞o′), republic on the west coast of S.A.; 284, *287*, 288, 295, 313, *323*, 324, *324*, 326–330, *329*, *330*, 332, *333*, 334
Petersburg, Va. (pē′tẽrz-bûrg); 139
Philadelphia, Pa. (fĭl′ȧ-dĕl′fĭ-ȧ); 62, 97, 130, 154, 214, 223, 238–240, 299
Phoenix, Ariz.* (fē′nĭks); 89, 91
Piedmont (pēd′mônt), upland belt bordering on the east the Blue Ridge and Appalachian Mts. from the Hudson River to central Alabama; 66, 126, 129, 136–140, *136*, 143, 145, 146, 205, 208
pier (pēr), wharf or dock built out over the water; 111, 134, 193, *218*, 323
Pierre, S. Dak.* (pēr); *178*
Pittsburgh, Pa. (pĭts′bûrg); 162, 169, 186, 198, *209*, 229, *241*, 242, 243
plastics (plăs′tĭks), articles made from chemicals, such as substitutes for glass, wood, leather, cloth, rubber, etc.; 199, 244
Plata (plä′tä), river in Argentina, S.A.; *281*, 282, 283, 313, 320, 322
plateau (plă-tō̇′), elevated tract of land, tableland; 2, 5, 19, 31, 46, 88, 143–145, 229, 242, 249, 250, 253–258, *262*, 263–265, 288–291, 294, 295, 298, 302, 305, 328–332, 335
Plymouth Rock (plĭm′ůth rŏk), ledge or rock in Plymouth Harbor, Mass., on which it is supposed the Pilgrims landed; 61, 213
Poconos (pō′kō̇-nōz), group of mountains in northeast Pa.; 212
Port Arthur (pôrt är′thůr), city in northwest Ontario, Canada, on Lake Superior; 33, 36
Port Arthur, Tex. (är′thůr); 163
Portland, Maine (pôrt′lånd); 219, 221
Portland, Oreg. (pôrt′lånd); 83, 86, 109–112
Pôrto Allegre (pōr′to͝o ä-lā′grě), seaport city in Brazil, S.A.; 307
Portsmouth, N. H. (pōrts′můth); 215, 219, 221
Portugal (pôr′tū-gål), country on the western coast of Europe, south and west of Spain; 301, 302, 305, 315
Potomac (pō-tō′måk), river flowing from W. Va., between Va. and Md., to Chesapeake Bay; 66, 128
Potosí (pō-tō̇-sē′), city on the altiplano in Bolivia, S.A.; 331, 332
Pottsville, Pa. (pŏts′vĭl); 241
prairie (prâr′ĭ), large, treeless tract of level or rolling grassland, especially in central U.S. and Canada; 35–37, *37*, 112, 118, 165, 166, 178, 197
Prairie Provinces (prâr′ĭ prŏv′ĭn-sĕs), Manitoba, Saskatchewan, and Alberta provinces in Canada; 35–39, *35*, 41, 44, 69
Pribilof (prē′bē̇-lŏf′), islands in the Bering Sea off Alaska; fur-seal grounds; 14, *15*
Prince Edward (prĭns ĕd′wẽrd), island and province of Canada, in Gulf of St. Lawrence; 23, *24*, 26, 27, *27*
Prince Rupert (ro͞o′pẽrt), seaport in west British Columbia, Canada; 41, 42, 44
Providence, R. I.* (prŏv′ĭ-děns); 223, 224
Provo, Utah (prō′vō); 119
Puebla (pwā′blä), state and city in Mexico; 257

Pueblo, Colo. (pwĕb′lō); 119
Puerto Cortez (pwâr′tō kȯr-tās′), seaport in northwest Honduras, C.A.; 266
Puerto Montt (mȯnt), seaport on Gulf of Ancud, Chile, S.A.; 336, 337
Puerto Rico (rē′kō), island belonging to the U.S., east of Hispaniola in the West Indies; 159, *250*, 272, 273
Puget Sound (pū′jĕt sound), extension of the Pacific Ocean into the northwest part of the State of Wash.; 110, 111, 113
Punta Arenas (po͞on′tä ä-rā′näs), capital of Magallanes, Chile, on Strait of Magellan, S.A.; *317*

Q

Quebec (keē̇-bĕk′), capital city of the Province of Quebec, Canada, on the St. Lawrence River; 21, 22, *24*, 29, *29*, *30*, 31–34, *32*, 41
Quito (kē′tō), city in Ecuador, S.A.; 284, *316*, 325, 326, 328

R

Raleigh, N. C.* (rô′lĭ); 139
rapids (răp′ĭdz), place in a river where the water rushes swiftly because of a steep slope in the river bed; 12, 31
Reading, Pa. (rĕd′ĭng); 239, 240, 241
Recife (rǡ-sē′fē̊), sugar, fruit, and cattle port on eastern coast of Brazil, S.A.; 304
Red (rĕd), river flowing from N.W. Texas to the Mississippi River; 35
Regina (rē̇-jī′nȧ), capital city of Saskatchewan, Canada; 38
Reykjavik(rā′kyȧ-vēk′), capital city of Iceland; 54
Rhode Island (rōd ī′lă̊nd), New England state, smallest state of the U.S.; 115, 205, *207*, 217, 223
Richmond, Va.* (rĭch′mŭ̊nd); 139
Rio de Janeiro (rē′ō dā zhȧ-nā′rō), state in Brazil; also capital city and seaport of Brazil, S.A.; 2, *301*, 302–306, *310*
Rio Grande (grän′dǡ), river, boundary between Texas and Mexico; 64, 65, 155, 156, 159, 166, 251, 253
Rio Grande do Sul (grän′dǡ do͞o so͞ol), seaport in south Brazil, S.A.; 307
River Rouge, Mich. (rĭv′ẽr ro͞ozh); 192
Roanoke, Va. (rō′ȧ-nōk′); 145
Rochester, N. Y. (rŏch′ĕ̊s-tẽr); 235, 236
Rocky (rŏk′ĭ), North American mountain range extending from the Arctic to New Mexico; 31, 35, 63, *65*, 67, 71, 74, 76, 80, 91, 112, 116, 118, 119, 182, 183, 229, 289, 315, 316
Roosevelt Dam (rōz′vĕlt); 89
Rosario (rȱ-sä′rē̇-ō), commercial town and port on Paraná River, Argentina, S.A.; 318, 322
Russia (rŭsh′ȧ), part of the Union of Soviet Socialistic Republics in Europe and Asia;9,291,314

S

sabana (sä-bä′nä), high plateau; 288, 289
Sacramento (săk′rȧ-mĕn′tō), river flowing to east inlet of San Francisco Bay; 104, *107*
Sacramento, Calif.* (săk′rȧ-mĕn′tō); *64*, 68, 101, 102
St. Augustine, Fla. (sānt ô′gŭ̊s-tēn), oldest town in the U.S.; 64
St. Elias (ē̇-lī′ă̊s), mountain range in southwest Yukon Territory, Canada and east Alaska, near Pacific; 46
St. John (jŏn), city—New Brunswick, Canada, on the Bay of Fundy; 27. river—in Maine and New Brunswick, flows to Bay of Fundy; 26, 27
St. Johnsbury, Vt. (jŏnz′bẽr-ĭ); 225
St. Joseph, Mo. (jō′zĕ̊f); 197
St. Lawrence (lô′rĕ̊ns), river flowing from Lake Ontario into the Gulf of St. Lawrence; 21, 22, 26, 31–33, 36, 191, 226, 243, 244, 286
St. Louis, Mo. (lo͞o′ĭs); 162, *193*, 195–198
St. Paul, Minn.* (pôl); 196, 197
Salem, Oreg.* (sā′lĕ̊m); 111
Salinas, Calif. (sȧ-lē′nȧs); 106
Salt Lake City, Utah* (sôlt lāk sĭt′ĭ); 119, 291, 319
Salton Sea (sôlt′ŭn sē), depression in Imperial Valley, Calif.; the water surface is 248 feet below sea level; 91, 92
San Antonio, Tex. (săn ăn-tō′nĭ-ō); 65, 157, *163*
San Diego, Calif. (săn dē̇-ā′gō); 86, 94, 95, 98
San Francisco, Calif. (săn frăn-sĭs′kō); 5, 70, 79, 86, *94*, 101, *102*, 106, 107, 198, 267, 321
San Joaquin (hwä-kēn′), river in Calif. from Sierra Nevada Mts. to Sacramento River; 104, *107*
San José (hȱ-sā′), seaport—south Guatemala, C.A.; 263. city—in Costa Rica, C.A.; *253*
San Luis Potosí (lo͝o-ēs′ pō-tȱ-sē′), commercial city in north central Mexico; 258
San Salvador (săl′vȧ-dôr), capital city of El Salvador; 263, 265
Santa Barbara, Calif. (săn′tȧ bär′bȧ-rȧ); 94, 95
Santa Clara (klâ′rȧ), small fertile valley, south of San Francisco Bay; 106
Santa Cruz (kro͞oz), eastern department, Bolivia, S.A.; also capital city of department; 333
Santa Fé (fā′), river port in Argentina, S.A.; 318, 319
Sante Fe, N. Mex.* (fā′); *70*
Santa Marta (mär′tä), seaport town of Colombia, S.A.; and volcano at the northern arm of the Andes, east of the Magdalena River; 288, 290
Santiago (sän′tē̇-ä′gō), capital city of Chile, S.A.; 2–4, 282, *316*, 336, *337*
Santos (sän′tōs), city in Brazil on the Atlantic Coast of S.A., near Rio de Janeiro; 302, 304, 305, *317*
São Paulo (souṅ′pou′lo͞o), capital city of the State of São Paulo in eastern Brazil, S.A.; 303–305 *305*, *310*, *317*, 322

Saskatchewan (săs-kăch′ĕ̇-wôn), province—western Canada; *24*, 35, 36, 37, 38. river—in Canada which flows 1,300 miles from the Rocky Mountains to Lake Winnipeg; 35, 37, 38, 42
Sault Ste. Marie, Mich. (so͞o′ sānt mā′rĭ); 33
Savannah, Ga. (s*ȧ*-văn′*ȧ*); 62, 129, 133, 135, 153
Schenectady, N. Y. (skĕ̇-nĕk′t*ȧ*-dĭ); 236
Schuylkill (sko͞ol′kĭl), river in Pa., flows to Delaware River; 210, 238, 240
Scotland (skŏt′lă̇nd), part of Great Britain, north of England; 236, 330
Scranton, Pa. (skrăn′tŭ̇n); 241
sea level (sē lĕv′ĕ̇l), standard elevation—the level of the sea halfway between high and low tide; used as the standard in measuring the height of land; 2, 19, *65*, *69*, 75, 76, 89, 91, 103, 254, 267, 284, 289, 335
Seattle, Wash. (sē̇-ăt′l); 3, 10, 11, 83, 86, 110, 111, 113
Selvas (sĕl′bäs), rain forest of the Amazon, S.A.; 282, 292
Sequoia National Park (sē̇-kwoi′*ȧ*); 82
Shasta Dam (shăs′t*ȧ*); 103
Shenandoah National Park (shĕn′ă̇n-dō′*ȧ*); 143
Shreveport, La. (shrēv′pōrt); 162, 163
Sierra Madre Occidental (syĕr′ä mä′drā ŏ̇k-sē̇-dĕn-täl′), chain of mountains in western Mexico; 254, 256
Sierra Nevada (sĭ-ĕr′*ȧ* nĕ̇-văd′*ȧ*), mountain range extending north and south through Calif.; 67, 70, 71, 79, 82, 96, 100, 101, 103, 107, 114, 115
Sioux City, Iowa (so͞o sĭt′ĭ); 197, 198
Skowhegan, Maine (skou-hē′gă̇n); 220
Snake (snāk), river in Yellowstone National Park, flows to Columbia River, Wash.; 114
soil conservation (soil kŏn′sẽr-vā′shŭ̇n), the prevention of waste or loss of soil; *169*, 188
Sorato (sō̇-rä′tō), health resort and town in Bolivia, east of Lake Titicaca, S.A.; 331
South America (south *ȧ*-mĕr′ĭ-k*ȧ*), southern continent of the Western Hemisphere; 1–6, *2*, 14, 27, 64, 134, *196*, 208, 222, 230, 249, 263, 267, 269, 275, 282–288, *286*, *287*, 294, 295, 298, 301, 304, 313, 318, 320, 321, 323, 327, 330, 332, 336, 337
South Carolina (south kăr′ō̇-lī′n*ȧ*), southern state of the U.S.; 11, *129*, 130, 131, 138, 140, 219, 272
South Dakota (south d*ȧ*-kō′t*ȧ*), north central state in the U.S.; *179*, 180, 182, 184, *189*, 271
Southern States (sŭ*th*′ẽrn stā̇ts), that part of the U.S. south of Mason and Dixon's Line, the Ohio River, and the southern boundaries of Mo. and Kans.; 125–128, *125*, *127*, *129*, 132, 138, 142, 160, 165, 166, 168, 205, 214, 222, *237*, 306
Spain (spān), republic in southwestern Europe; 62–64, 250, 251, 255, 263, 264, 281, 288, 295, 301, 302, 315, 330
Spartanburg, S. C. (spär′tă̇n-bûrg); 138, 140
Spokane, Wash. (spō̇-kăn′); *83*, 113
Springfield, Ill.* (sprĭng′fēld); *178*
Springfield, Mass. (sprĭng′fēld); 225
Staunton, Va. (stôn′tŭ̇n); 145
Strait of Magellan (strāt m*ȧ*-jĕl′ă̇n), narrow passage of water separating the southern end of S.A. from Tierra del Fuego; 315, 337
Sucre (so͞o′krā), city on the altiplano, Bolivia, S.A.; 331
Sudbury (sŭd′bẽr-ē̇), city east of Lake Superior, Ontario, Canada; 29, 32
Superior, Wis. (sū̇-pē̇′rĭ-ẽr); 186, 194
Surinam (so͞o′rĭ-näm′), Dutch colony north of S.A. between Br. and Fr. Guiana, one of The Guianas; 298, 299
Susquehanna (sŭs′kwē̇-hăn′*ȧ*), river east of central Pa., flows to Chesapeake Bay; 134, 210, 238, 241
synthetic (sĭn-thĕt′ĭk), putting together of elements in a new form, making by artificial means; 39, 164, 198, 199, 244
Syracuse, N. Y. (sĭr′*ȧ*-kūs′); 236

T

Tallahassee, Fla.* (tăl′*ȧ*-hăs′ē̇); 151
Tamaqua, Pa. (t*ȧ*-mô′kw*ȧ*); 241
Tampa, Fla. (tām′p*ȧ*); 152–154
Tampico (täm-pē′kō), town and port in Mexico; 255, 259
Tanana (tä′nȧ-nä′), river in central Alaska, flows into the Yukon River; 15, 16
tariff (tăr′ĭf), tax or duty placed on goods entering, or leaving, a country; 275, 276
Tegucigalpa (tā̇-go͞o-sē̇-gäl′pä), capital city of Honduras, C.A.; *262*, 267
Tennessee (tĕn′ĕ̇-sē′), river—flows through Tenn. and Ala. and into the Ohio River; 146–148, *148*. state—southern U.S.; 63, 125, *129*, 138, 140, 142–144, 146, 147
Texas (tĕk′s*ȧ*s), largest state of the U.S., bordering on Mexico, and the Gulf of Mexico; 11, 64, 65, 98, 125, 126, *129*, 131, 153, 156–163, 165, *165*, 166, 192, 195, 210, 257, 258, 294, 306, *313*, 315
tide (tīd), regular rise and fall twice every day of the oceans and the bodies of water connected with them; 24, 27
Tierra Caliente (tyĕr′rä käl-yĕn′tā), hot zone in Mexico; 253, 255
Tierra del Fuego (dĕl fwā′gō), group of islands at the southern end of S.A., separated from the mainland by the Strait of Magellan; 282, 315, 337
Tierra Fria (frē′ä), cold zone in Mexico; 253, 254
Tierra Templada (tĕm-plä′dä), mild zone in Mexico; 253, 256, 260
Toledo, Ohio (tō̇-lē′dō); 186, 193

Topeka, Kans.* (tō-pē′kȧ); *178*

topography (tō-pŏg′rȧ-fĭ), surface features of the earth or of a particular region, including such physical characteristics as mountains, rivers, cities, communication routes; *64*

Toronto (tō-rŏn′tō), city on Lake Ontario, capital of Ontario, Canada; 33, 45

Torrid Zone (tŏr′ĭd zōn), zone which includes the Equator; 250, 283

trade wind (trād wĭnd), wind in or near the Torrid Zone which blows steadily toward the Equator from an easterly direction; 260, 272, 298

Trenton, N. J.* (trĕn′tŭn); 208, 237, 238

Trinidad (trĭn′ĭ-dăd′), British island in the West Indies, off the northeast coast of Venezuela, S.A.; 39, *250*, 273, *273*, 274, 286

Tropic of Cancer (trŏp′ĭk kăn′sẽr), imaginary circle on the earth's surface, parallel to the Equator and marking the northern limit of the Torrid Zone; 253, 262, 270

tropics (trŏp′ĭks), region of the earth lying between the Tropic of Cancer and the Tropic of Capricorn; the Torrid Zone; 270, 283, 293, 294, 296, 310, 320

Troy, N.Y. (troi); 236

Tucson, Ariz. (to͞o-sŏn′); 91

Tucumán (to͞o-ko͞o-män′), city and center of sugar industry in Argentina, S.A.; 317

Tulsa, Okla. (tŭl′sȧ); 163, 166

tundra (to͝on′drȧ), stretch of the flat or rolling, marshy land formed in northern arctic regions; 14, 29, 45

TVA, abbr. for Tennessee Valley Authority, created 1934 by Act of Congress; 147, 148, *148*, 184

U

Ucayali (o͞o′kä-yä′lē), river in Peru, S.A., which flows for 1,500 miles and into the Amazon River; 329

United States (ū-nīt′ĕd stāts), federal republic, N.A., comprising 48 states and the District of Columbia; 3–5, 9, *10*, 11, 12, 14, 16, 18–20, *19*, 23, 24, 30, 34–36, 44, 46, 49, 50–52, 55, 56, 61–66, *62*, 69, *69*, 70, *72*, 78, 80, 84–87, 89, 91–94, 96, 97, 99, 100, 104, 106, 110, 112–114, *129*, 131–133, 137–140, 147, 148, 150, 152, 154, 159–163, 166, 168, *170*, 177, 184, 186–188, *189*, 191, 193, 195, 197, 199, 205, *207*, 210, 214, 222, 224, 229, 232, 234, 241, 249–252, *252*, 254–256, 258–260, 265–268, 270–275, 287–289, 291, 293, 296, 297, 299, 301, 304–306, 309–311, 314–317, 320, 324, 326, 331, 336, 337

Uruguay (ū′ro͞o-gwā), republic—southeastern coast of S.A.; *287*, 306, 307, 313, 320, 321, *321*. river—S.A. river which flows into the Plata; 306, 307

Utah (ū′tô), state in the U.S., west of the Rocky Mts.; 65, *72*, 76, *78*, 80, 81, 91, 114, 119

Utica, N.Y. (u′tĭ-kȧ); 236

V

Valdivia (väl-dē′vē-ä), city and province in Chile, S.A.; *316*

Valparaiso (văl′pȧ-rī′zō), province in Chile, S.A., also a seaport and capital of the province; 336

Valley of the Columbia (văl′ĭ kō-lŭm′bĭ-ȧ), valley of the Columbia River, also called "Inland Empire"; 88

Valley Forge, Pa. (văl′ĭ fōrj); 213

Valley of Southern California (văl′ĭ sŭ*th*′ẽrn kăl′ĭ-fôr′nĭ-ȧ), narrow strip of land between the mountains and the sea, between San Diego and Santa Barbara; 88, 94, 95, 98, 101, 104

Vancouver (văn-ko͞o′vẽr), island off the west coast of Canada, a part of Br. Columbia, Canada: also a city in Br. Columbia; 41–43, *44*, 45

Venezuela (vĕn′ē-zwē′lȧ), republic, S.A.; 275, 276, 283, 285, 286, *286*, *287*, 288, 294–297, *297*, 298, 311

volcano (vŏl-kā′nō), opening in the earth's surface, generally surrounded by a mass of ejected material forming a hill or mountain from which molten rock, gases and steam are expelled; 13, 254, 273, 288

W

Wasatch (wô′săch), mountain range in Utah; 114, 119

Washington (wŏsh′ĭng-tŭn), western state of the U.S.; 41, 53, 66, 71, *72*, 74, 76, 81, *82*, 83, 84, 86, 110–113, 207, 234, 316, 336

Washington, D. C. (wŏsh′ĭng-tŭn), capital city of U.S.; 33, 50, *61*, *64*, 66, 95, 99, 130, 137, 139, 146, 151, 162, 224, 258, 318

Waterbury, Conn. (wô′tẽr-bĕr-ĭ); 224

Wenatchee (wē-năch′ē), small river which flows into the Columbia River in Washington State; 112

West Indies (wĕst ĭn′dĭz), group of islands in the Atlantic Ocean, east of C.A., including the Greater and the Lesser Antilles and the Bahamas; 3, 4, 19, 219, 222, 249, 250, *250*, 263, 269, 270, 273, 274

West Quoddy Head, Maine (wĕst kwŏd′ĭ hĕd), eastern tip of Maine; 215–216

West Virginia (wĕst vẽr-jĭn′ĭ-ȧ), southern state of the U.S.; 80, 126, *129*, 134, 144, 169, 194, 198, 210, 223, 230, 243

Western States (wĕs′tẽrn stāts), states forming the western region of the U.S.; 69, 70, *70*, 72, *72*, 76, 77, *78*, 80, 85, 88, 113, 114, 116, 117, *118*, 119, 120, 125, 133, 181, *237*, 308, 315

White (hwīt), range of mountains through Maine and N.H.; 205, 212

Wilkes-Barre, Pa. (wĭlks′⫽băr′rĭ); 241

Willamette (wĭ-lăm′ĕt), river flowing north into the Columbia River; 111

Wilmington, Del. (wĭl′mĭng-tŭ̇n); 133, 238

Winchester, Va. (wĭn′chĕs-tẽr); 145

Windward and Leeward (wĭnd′wẽrd lē′wẽrd), island group, division of the Lesser Antilles in Br. West Indies, not a political division of the Lesser Antilles; *250*

Winnipeg (wĭn′ĭ-pĕg), capital city—Manitoba Province, Canada; *21*, *37*, 38, 43. river—in Canada flowing from the Lake of the Woods to Winnipeg Lake; *21*

Winston-Salem, N. C. (wĭn′stŭ̇n⫽sā′lĕ̇m); 137, 139

Wisconsin (wĭs-kŏn′sĭn), north central state of the U.S.; 178, 180, 184–188, *189*, 208

Wyoming (wī-ō′mĭng), western state of the U.S.; *72*, 73, *75*, 76, 81, 91, 166, 182, 192

Y

Yakima (yăk′ĭ-mȧ), river, 250 mi. long, flowing from the Cascade Range to Columbia River; 112

Yellowstone National Park (yĕl′ŏ̇-stōn); 86, 120

Yosemite National Park (yŏ̇-sĕm′ĭ-tē̇); 70, 71, *86*, 107

Youngstown, Ohio (yŭngz′toun); 186, 198

Yucatan (yo͞o′kä-tän′), state of Mexico; 253, 255, 260

Yukon (yo͞o′kŏn), river—in Canada and Alaska, flowing into the Pacific; 11, 15, 16, *46*. territory—a territory of northwestern Canada; 14, 19, 23, *24*, 45, 46, *46*, 53

Yuma, Ariz. (yo͞o′mä); 89, 92, 93

Yungas (yo͝on′gäs), highland valley region in Bolivia, S.A.; 323

hāy, vă̇cation, râre, măp, grȧss, bȧnanȧ, bärn, locă̇l, ēven, dē̇gree, dĕlta, channĕ̇l, resẽrvoir, īceberg, hemĭsphere, Belém, ōcean, pō̇tato, côrn, dôg, hŏt, latitūde, ū̇nite, fûr, gŭ̇lf, walrŭ̇s, soil, zo͞o, fo͝ot, mountain, gully, gorge, jade, yesterday, long, ranch, ship, north, northern, whale, zeal, measure

Acknowledgments

The authors wish to acknowledge the contributions of the following:

The members of consulates, teachers, and publishers' representatives who read and criticized the manuscript

The consulates for providing research data and photographs

Mrs. Meredith R. Smith, formerly elementary supervsior, for pupil activities, legends, and other instructional features of the book

In addition to color art work in the panels by Alberto Cugat, art work by Mel Fahrner, Muriel Thomas, and the H. L. Yoh Co., Inc.

Lettering in the atlas by Colin Landon

Members of the editorial staff of the John C. Winston Company for advice and counsel on the editorial and production phases of this book.

The services of research staffs of Chambers of Commerce, industries, and government agencies for supplying basic facts

The services of commercial photographers, industries, and government agencies for photographs.

Atlas

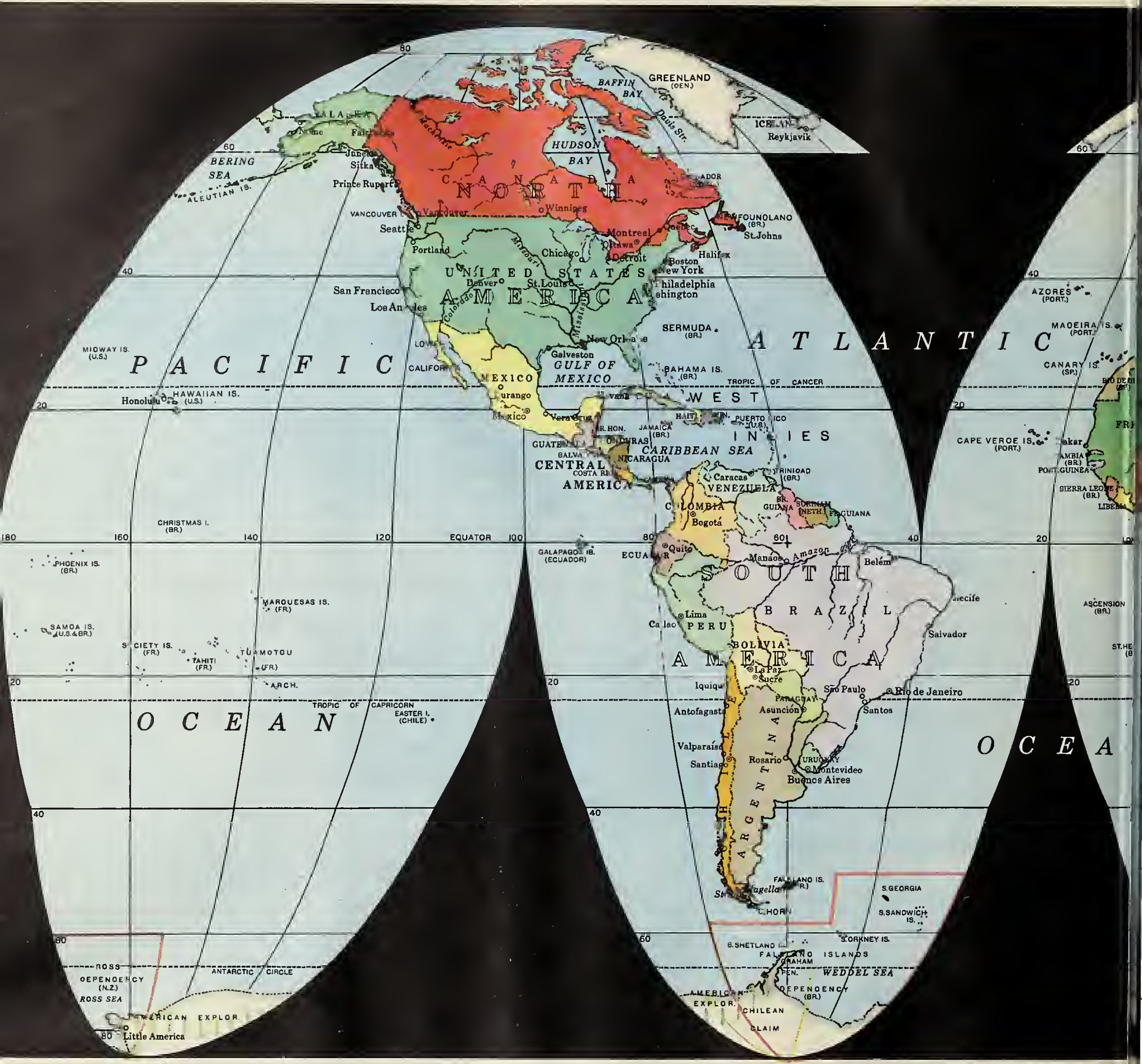
This part of your geography is an atlas—a series of maps to help you in your study of the world and its peoples. The maps are placed in this section of the book so that you have a single, ready reference for map work instead of many maps scattered throughout the book. Many times you will want to know where a country, state, city, river, or mountain is located. Perhaps you will want to learn how one state compares with another state in size. You may want to know the direction or distance of a certain place from where you live. To answer these and many other questions turn to this atlas section of your book. These maps show the physical features of our earth and where people live. You will enjoy using the atlas because the maps are easy to read. There are no confusing lines across the land areas on the maps.

In order to give you a clear understanding of the global world, the maps are global views. Photographs of sections of the globe were used as the basis for each of the maps of the continents and of the divisions of the North American continent. Of the 16 maps included in this atlas, 12 are global views. Four of the maps show the world, both political and climatic views, and the Northern and Southern hemispheres. The colors used in the physical maps show differences in land elevation. These colors follow the international color scheme for physical maps.

Form the habit of turning often to this atlas to help you with your study of geography.

The following maps are included:

I World (political)
II World (climatic)
III Northern Hemisphere
IV Southern Hemisphere
V North America
VI Canada—Alaska
VII United States of America
VIII Western United States
IX Middle United States
X Eastern United States
XI Middle America
XII South America
XIII Europe
XIV Africa
XV Asia
XVI Australasia



Key to abbreviations

AL.	Alhania
ARCH.	Archipelago
(AUS.)	Australia
AUS.	Austria
BEL.	Belgium
BR.	British
BR. HON.	British Honduras
BUL.	Bulgaria
C.	Cape
C. R.	Costa Rica
CZECH.	Czechoslovakia
DEN.	Denmark
DEPEND	Dependency
DOMIN. REP.	Dominican Republic
FR.	France *or* French
GUAT.	Guatemala
HON.	Honduras
HUN.	Hungary
I.	Island
Is.	Islands
NETH.	Netherlands
NWFD.	Newfoundland
N. Z.	New Zealand
NIC.	Nicaragua
N.	North
NOR.	Norway
PAL.	Palestine
PAN.	Panama
PEN.	Peninsula
PHIL.	Philippines
PORT.	Portugal
PROT.	Protectorate
RUM.	Rumania
SAL.	Salvador
SOM. *or* SOMALI.	Somaliland
S.	South
S.A.	South Africa
SP.	Spain
ST.	Saint
SW.	Switzerland
TR. JOR.	Trans-Jordan
U.S.S.R.	Union of Soviet Socialist Repuhlics
U.S.	United States
YUGO.	Yugoslavia

Key to locations

N. AMER.	North America
S. AMER.	South America
EUR.	Europe
ASIA	Asia
AFR.	Africa
AUS.	Australia
ANT.	Antarctic
PAC. O.	Pacific Ocean
ATL. O.	Atlantic Ocean
IND. O.	Indian Ocean
MED. SEA	Mediterranean Sea

Principal countries of the world

Aden (Br. Prot.)	Asia
Afghanistan	Asia
Alaska (U.S.)	N. Amer.
Albania	Eur.
Aleutian Is. (U.S.)	N. Amer.
Algeria (Fr.)	Afr.
Anglo-Egyptian Sudan	Afr.
Angola (Port.)	Afr.
Argentina	S. Amer.
Ascension I. (Br.)	Atl. O.
Austria	Eur.
Azores Is. (Port.)	At. O.
Bahama Is. (Br.)	Atl. O.
Bechuanaland (Br.)	Afr.
Belgian Congo (Bel.)	Afr.
Belgium	Eur.
Bermuda (Br.)	Atl. O.
Bhutan	Asia
Bismark Arch. (Br.)	Pac. O.
Bolivia	S. Amer.
Borneo (Neth.)	Pac. O.
Brazil	S. Amer.
Br. Guiana (Br.)	S. Amer.
Br. Honduras (Br.)	S. Amer.
Br. Malaya (Br.)	Asia
Br. N. Borneo (Br.)	Pac. O.
Br. Somaliland (Br.)	Afr.
Brunei (Br.)	Pac. O
Bulgaria	Eur.
Burma (Br. Depend.)	Asia
Cameroons (Fr.)	Afr.
Canada	N. Amer.
Canary Is. (Sp.)	Atl. O.
Cape Horn (S.A.)	Afr.
Cape Verde Is. (Port.)	Atl. O.
Caroline Is	Pac. O.
Celehes (Neth.)	Pac. O.
Ceylon (Br.)	Ind. O.
Chile	S. Amer.
China	Asia
Christmas Is. (Br.)	Pac. O.
Colombia	S. Amer.
Costa Rica	N. Amer.
Crete (Greece)	Med. Sea
Cuba	N. Amer.
Cyprus (Br.)	Med. Sea
Czechoslovakia	Eur.
Denmark	Eur.
Dominican Republic	N. Amer.
Easter I. (Chile)	Pac. O.
Ecuador	S. Amer.
Egypt	Afr.
Eire	Eur.
Ellice Is. (Br.)	Pac. O.
Eritrea	Afr.
Ethiopia	Afr.
Falkland Is. (Br.)	Atl. O.
Falkland Is. Depend. (Br.)	Atl. O.
Fiji Is. (Br.)	Pac. O.
Finland	Eur.
Formosa (China)	Pac. O.
France	Eur.
Fr. Claim (Fr.)	Ant.
Fr. Equatorial Africa (Fr.)	Afr.
Fr. Guiana (Fr.)	S. Amer.

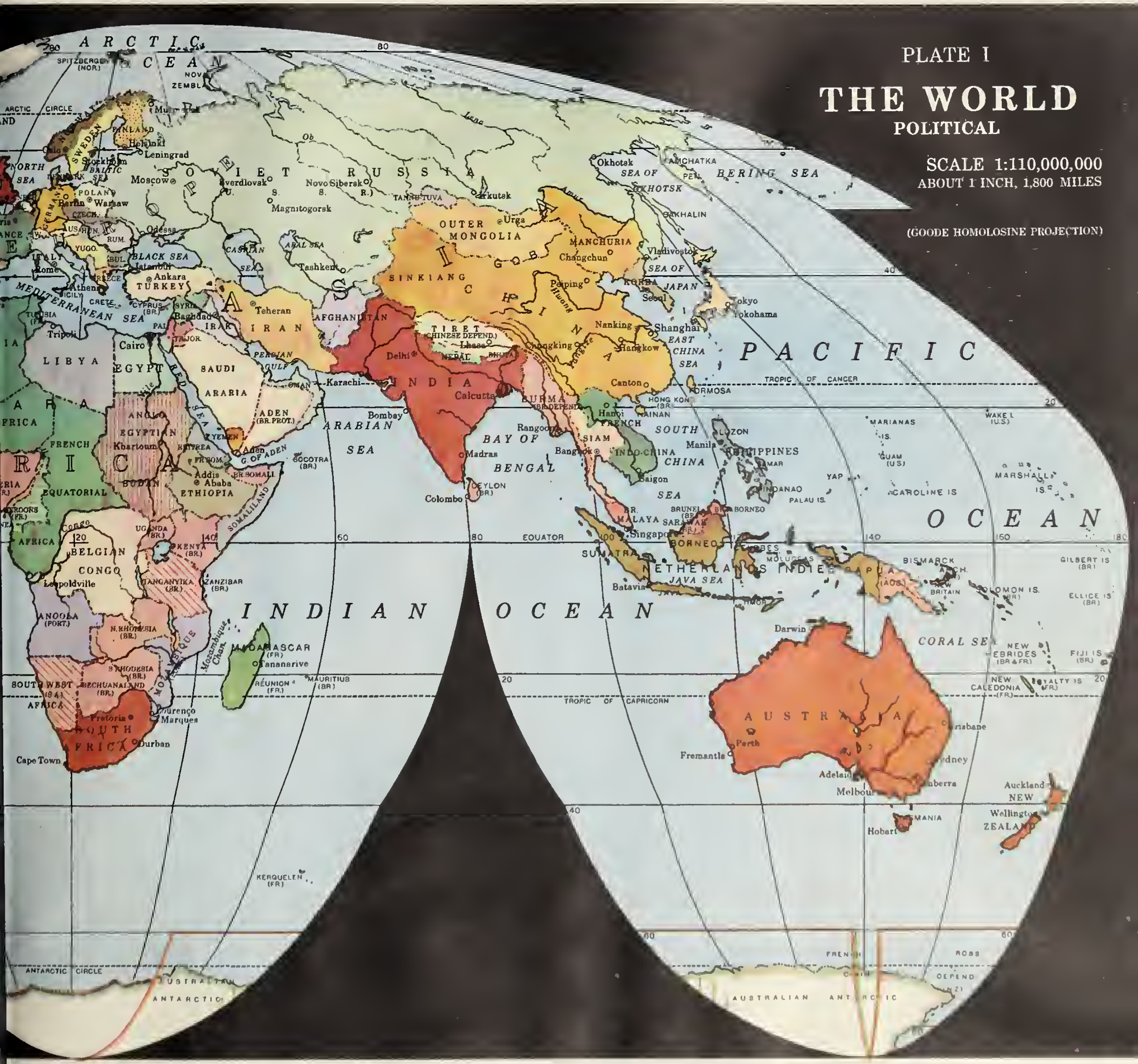


PLATE I

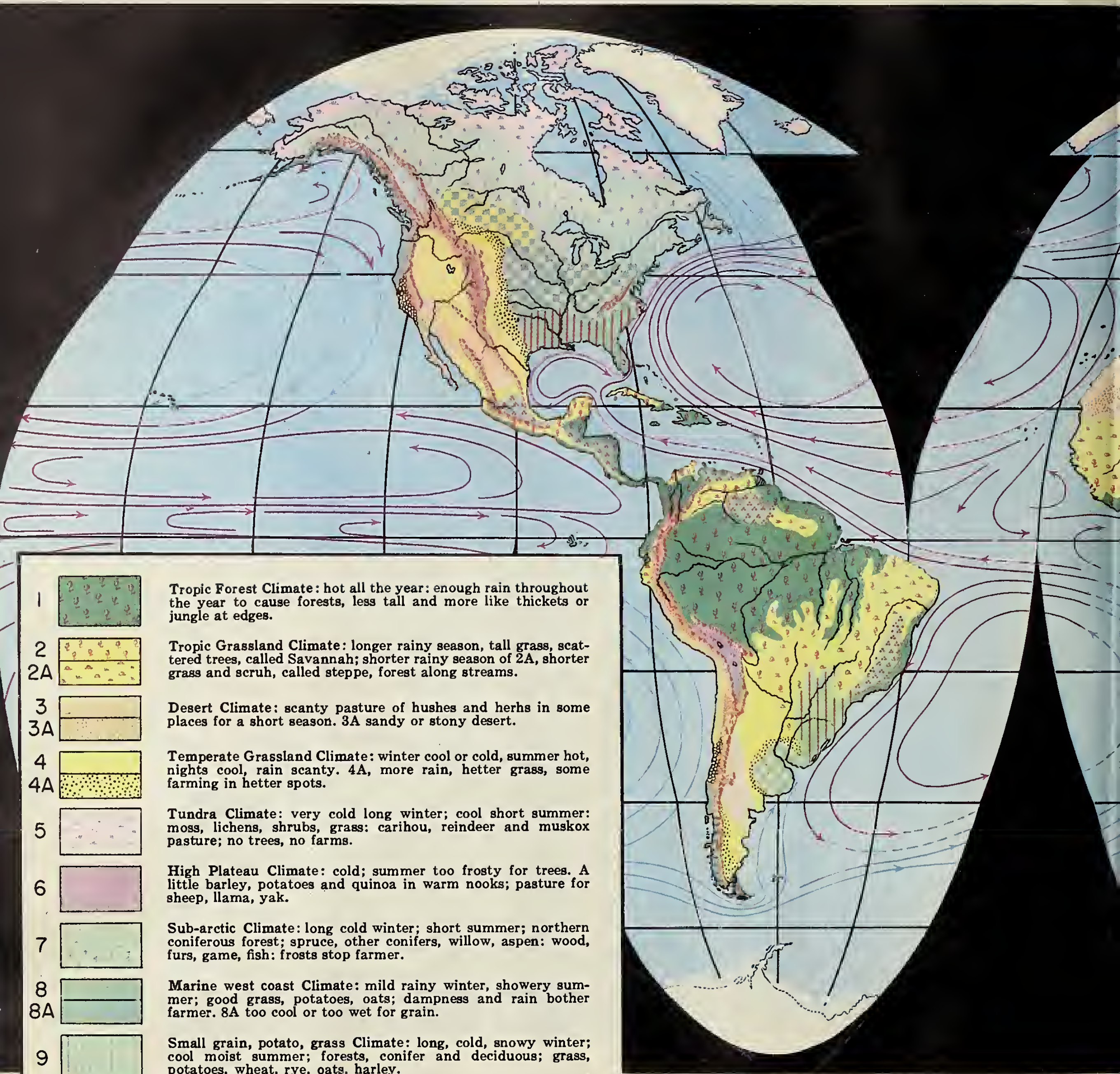
THE WORLD

POLITICAL

SCALE 1:110,000,000
ABOUT 1 INCH, 1,800 MILES

(GOODE HOMOLOSINE PROJECTION)

r. Indo-China	Asia
r. Somaliland (Fr.)	Afr.
r. West Africa (Fr.)	Afr.
alapagos Is. (Ecuador)	Pac. O.
ambia (Br.)	Afr.
ermany	Eur.
ilbert Is. (Br.)	Pac. O.
old Coast (Br.)	Afr.
reat Britain	Eur.
reece	Eur.
reenland (Den.)	N. Amer.
uam (U.S.)	Pac. O.
uatemala	N. Amer.
ainan I. (China)	Pac. O.
aiti	N. Amer.
awaiian Is. (U.S.)	Pac. O.
onduras	N. Amer.
ong Kong (Br.)	Asia
ungary	Eur.
eland	Atl. O.
dia	Asia
ak	Asia
an	Asia
aly	Eur.
maica (Br.)	Atl. O.
pan	Pac. O.
va (Neth.)	Ind. O.
Kamchatka Pen. (U.S.S.R.)	Asia
Kenya (Br.)	Afr.
Labrador (Nwfd.)	N. Amer.
Liberia	Afr.
Libya	Afr.
Loyalty Is. (Fr.)	Pac. O.
Luzon (Phil.)	Pac. O.
Madagascar I. (Fr.)	Ind. O.
Madeira Is. (Port.)	Atl. O.
Manchuria (China)	Asia
Marianas Is.	Pac. O.
Marquesas Is. (Fr.)	Pac. O.
Marshall Is.	Pac. O.
Mauritius I. (Br.)	Ind. O.
Mexico	N. Amer.
Midway Is. (U.S.)	Pac. O.
Mindanao (Phil.)	Pac. O.
Morocco (Fr.)	Afr.
Mozambique (Port.)	Afr.
Moluccas Is. (Neth.)	Pac. O.
Nepal	Asia
Netherlands	Eur.
Netherlands Indies (Neth.)	Asia
New Britain (Br.)	Pac. O.
New Caledonia (Fr.)	Pac. O.
Newfoundland (Br.)	N. Amer.
New Hebrides (Br. and Fr.)	Pac. O.
New Zealand	Aus.
Nicaragua	N. Amer.
Nigeria (Br.)	Afr.
N. Rhodesia (Br.)	Afr.
Norway	Eur.
Oman	Asia
Outer Mongolia	Asia
Palestine	Asia
Panama	N. Amer.
Papua (Neth. and Aus.)	Pac. O.
Paraguay	S. Amer.
Peru	S. Amer.
Philippines	Pac. O.
Phoenix I. (Br.)	Pac. O.
Poland	Eur.
Portugal	Eur.
Portuguese Guinea (Port.)	Afr.
Puerto Rico (U.S.)	N. Amer.
Reunion (Fr.)	Ind. O.
Rio de Oro (Sp.)	Afr.
Ross Depend. (N.Z.)	Ant.
Rumania	Eur.
Russia S.S.R. (U.S.S.R.)	Eur.
St. Helena (Br.)	Atl. O.
Sakhalin (U.S.S.R.)	Asia
Salvador	N. Amer.
Samar. (Phil.)	Pac. O.
Sarawak (Br.)	Pac. O.
Saudi Arabia	Asia
Siam	Asia
Sierra Leone (Br.)	Afr.
Sicily (Italy)	Eur.
Sinkiang (China)	Asia
Society Is. (Fr.)	Pac. O.
Socotra I. (Br.)	Asia
Solomon Is. (Br.)	Pac. O.
Samoa Is. (U.S. and Br.)	Pac. O.
Somaliland	Afr.
South Africa	Afr.
S. Rhodesia (Br.)	Afr.
Southwest Africa (S. A.)	Afr.
Soviet Russia	Eur. and Asia
Spain	Eur.
Spitsbergen I. (Nor.)	Atl. O.
Sumatra (Neth.)	Ind. O.
Surinam (Neth.)	S. Amer.
Sweden	Eur.
Switzerland	Eur.
Syria	Asia
Tahiti (Fr.)	Pac. O.
Tannu Tuva (U.S.S.R.)	Asia
Tanganyika (Br.)	Afr.
Tasmania (Aus.)	Aus.
Tibet (Chinese Depend.)	Asia
Timor (Neth.)	Ind. O.
Trans-Jordan	Asia
Trinidad (Br.)	Atl. O.
Tuamotou Arch. (Fr.)	Pac. O.
Turkey	Eur.
Uganda (Br.)	Afr.
Union of Soviet Socialist Republics	Eur. and Asia
United States	N. Amer.
Uruguay	S. Amer.
Vancouver (Canada)	N. Amer.
Venezuela	S. Amer.
Wake I. (U.S.)	Pac. O.
West Indies	Atl. O.
Yap	Pac. O.
Yemen	Asia
Yugoslavia	Eur.
Zanzibar (Br.)	Afr.



1	▨	**Tropic Forest Climate:** hot all the year: enough rain throughout the year to cause forests, less tall and more like thickets or jungle at edges.
2 2A	▨	**Tropic Grassland Climate:** longer rainy season, tall grass, scattered trees, called Savannah; shorter rainy season of 2A, shorter grass and scrub, called steppe, forest along streams.
3 3A	▨	**Desert Climate:** scanty pasture of bushes and herbs in some places for a short season. 3A sandy or stony desert.
4 4A	▨	**Temperate Grassland Climate:** winter cool or cold, summer hot, nights cool, rain scanty. 4A, more rain, better grass, some farming in better spots.
5	▨	**Tundra Climate:** very cold long winter; cool short summer: moss, lichens, shrubs, grass: caribou, reindeer and muskox pasture; no trees, no farms.
6	▨	**High Plateau Climate:** cold; summer too frosty for trees. A little barley, potatoes and quinoa in warm nooks; pasture for sheep, llama, yak.
7	▨	**Sub-arctic Climate:** long cold winter; short summer; northern coniferous forest; spruce, other conifers, willow, aspen: wood, furs, game, fish: frosts stop farmer.
8 8A	▨	**Marine west coast Climate:** mild rainy winter, showery summer; good grass, potatoes, oats; dampness and rain bother farmer. 8A too cool or too wet for grain.
9	▨	**Small grain, potato, grass Climate:** long, cold, snowy winter; cool moist summer; forests, conifer and deciduous; grass, potatoes, wheat, rye, oats, barley.
10	▨	**Humid continental Climate:** short summer, warm; winter very cold, a little snow; too dry for forests; natural grassland, spring wheat, rye, oats. Potatoes in moister parts.
11	▨	**Humid continental Climate:** long hot summer; winter frost, rain, snow: natural forest in north; corn, oats, hay, winter wheat better at north and west.
12	▨	**Mediterranean Climate:** cool rainy winter, some frost; summer dry: suits wheat, grape, olive; oranges in sheltered nooks with irrigation.
13	▨	**Moist subtropical Climate:** some frost in most of area; cotton and corn in cooler parts; rice, oranges and many other crops. Natural forest, pine, eucalyptus (Australia.)
14	▨	**Tropical Upland Climate:** elevation (3000-6000 ft.) makes climate cooler than lowlands nearby; all have rainy season; coffee, millet, sorghum, corn; bananas in warmer parts.
15	▨	**Icecap Climate:** Cold all the year. Snow does not melt, piles up, becomes glacier, covers Antarctica, most of Greenland. Many mountains have small areas of ice not shown.
16	▨	**Mountain Climates:** all types of climate from that at base to ice cap if high enough.
17	▨	**Desert Oasis Climate:** rivers from distant mountains, or large springs permit irrigation; only the largest areas can be shown. There are hundreds of patches of it.

↗ WARM	↗ COOL	↗ COLD

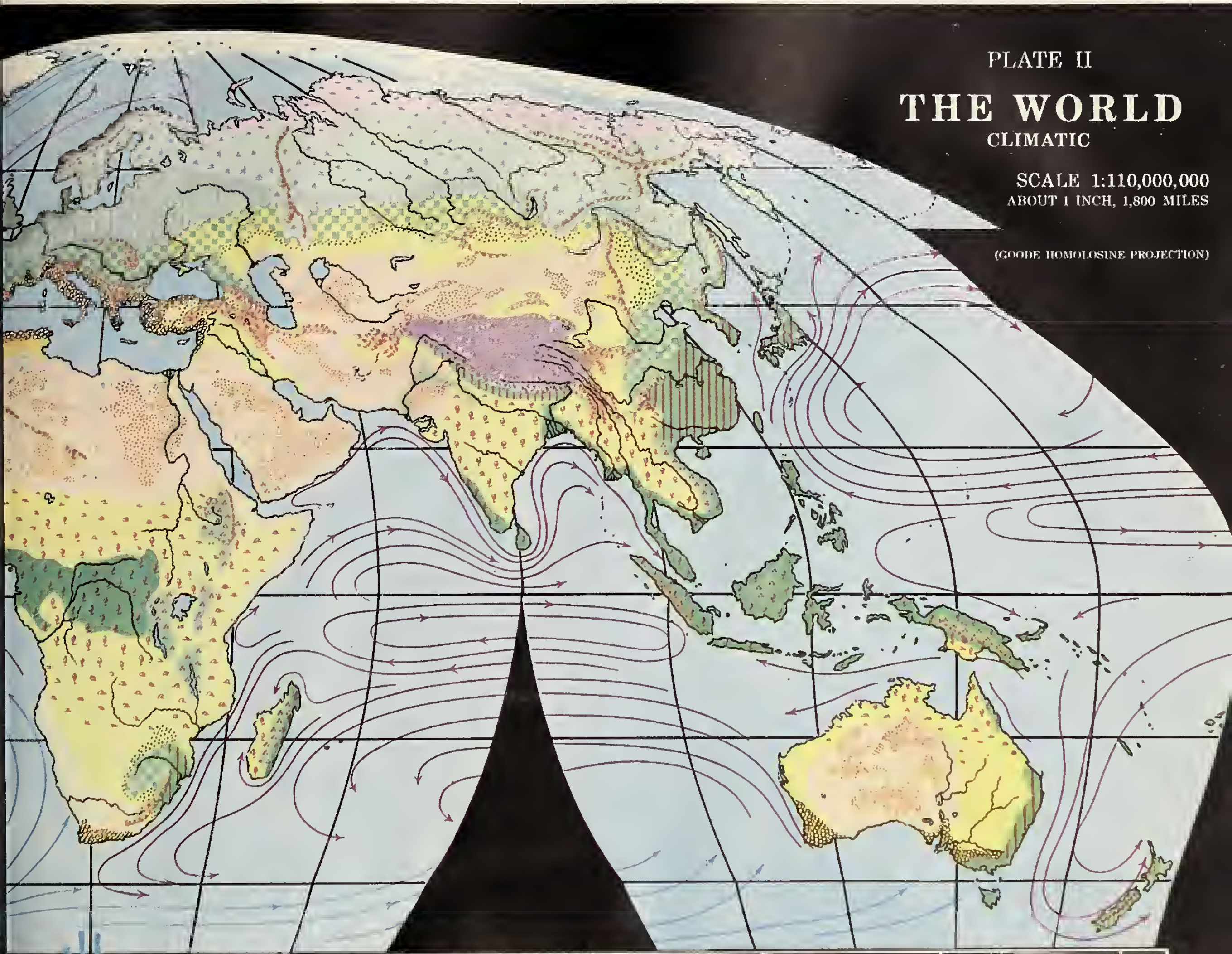
PLATE II

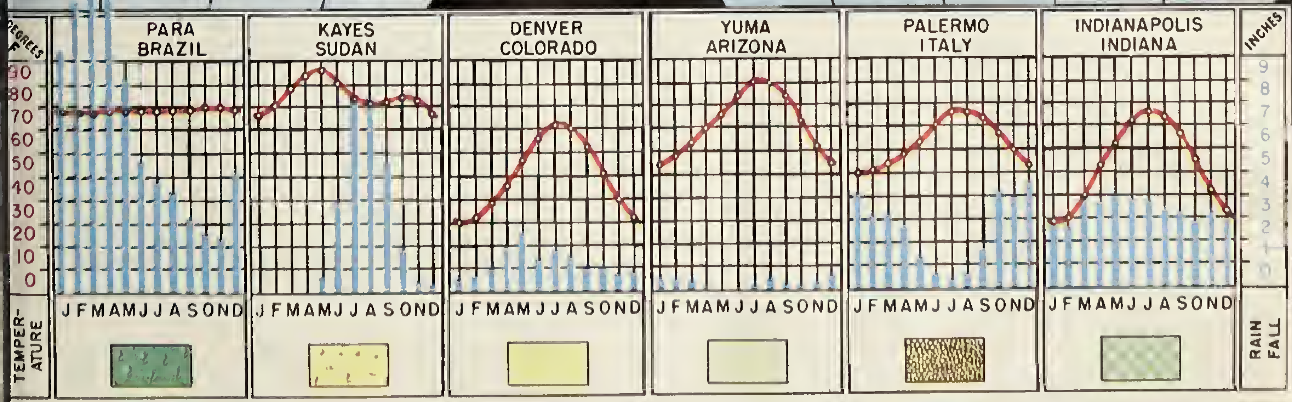
THE WORLD

CLIMATIC

SCALE 1:110,000,000
ABOUT 1 INCH, 1,800 MILES

(GOODE HOMOLOSINE PROJECTION)





The map shows that the same kind of climate may be found in several different parts of the world. How many continents have regions with climate No. 12? No. 11?

The six graphs in the lower right corner of the map may be called pictures of climates. The columns show the *average rainfall* for each month in a particular place. See figures at the right. Indianapolis has four inches of rain in May. How much does Palermo have? and Yuma? and Kayes?

The curved line crossing the graph shows the *average temperature* for each month. See figures at left. Indianapolis has a January temperature below 30°F. What has Palermo? Para? The graph for Yuma is a picture of a desert climate; Para, a hot wet forest climate; Indianapolis, a corn belt climate. You may want to make a climagraph for the community in which you live.

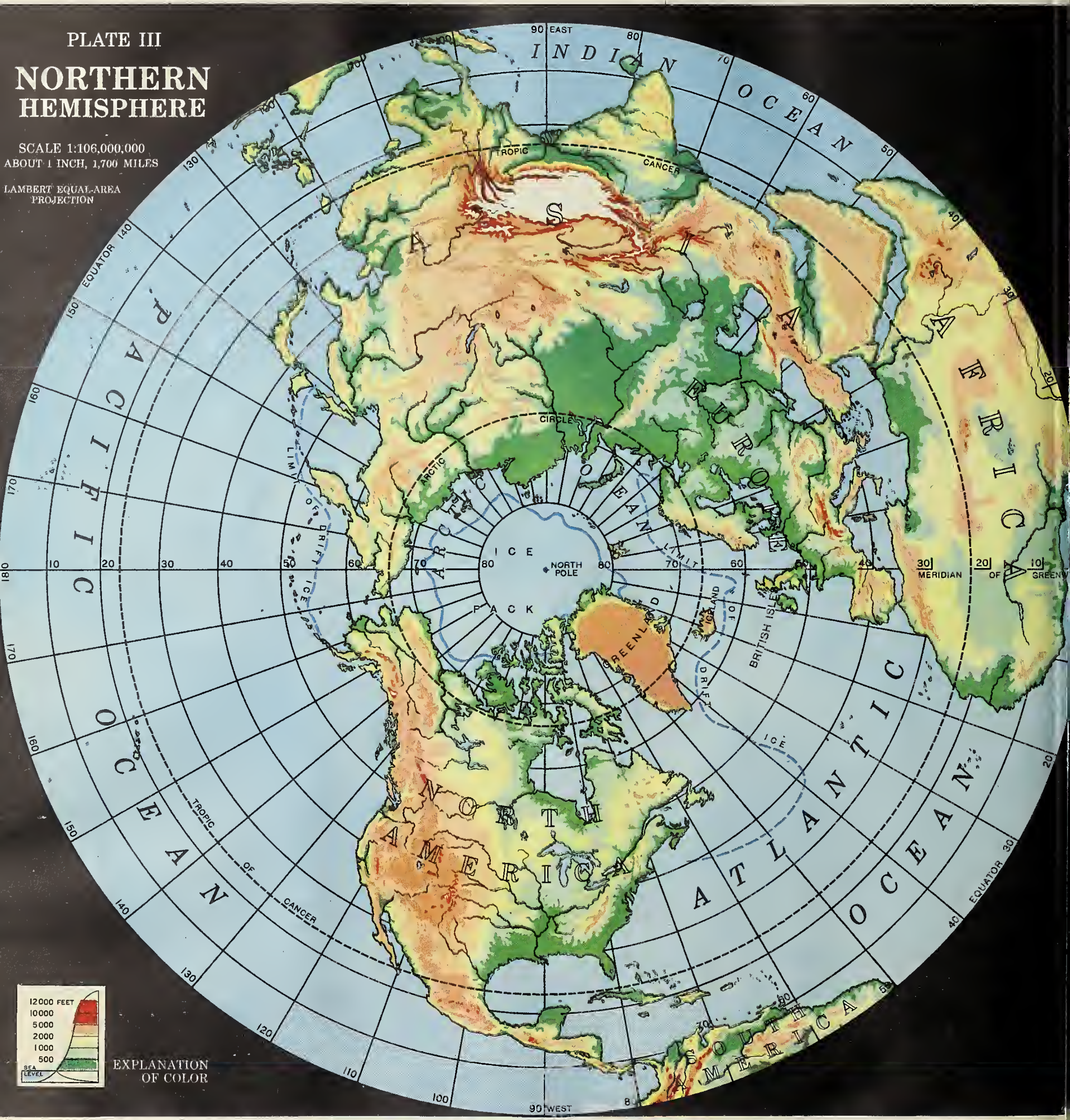
This map and these graphs are *geographic yard sticks.* When we have studied one region such as No. 11 or No. 12 in one continent, we know what to expect when we find another region with this climate in another continent. We know what crops man can grow and what he can do in that climate, wherever that climate may be found. This is a great aid in studying geography.

PLATE III

NORTHERN HEMISPHERE

SCALE 1:106,000,000
ABOUT 1 INCH, 1,700 MILES

LAMBERT EQUAL-AREA PROJECTION



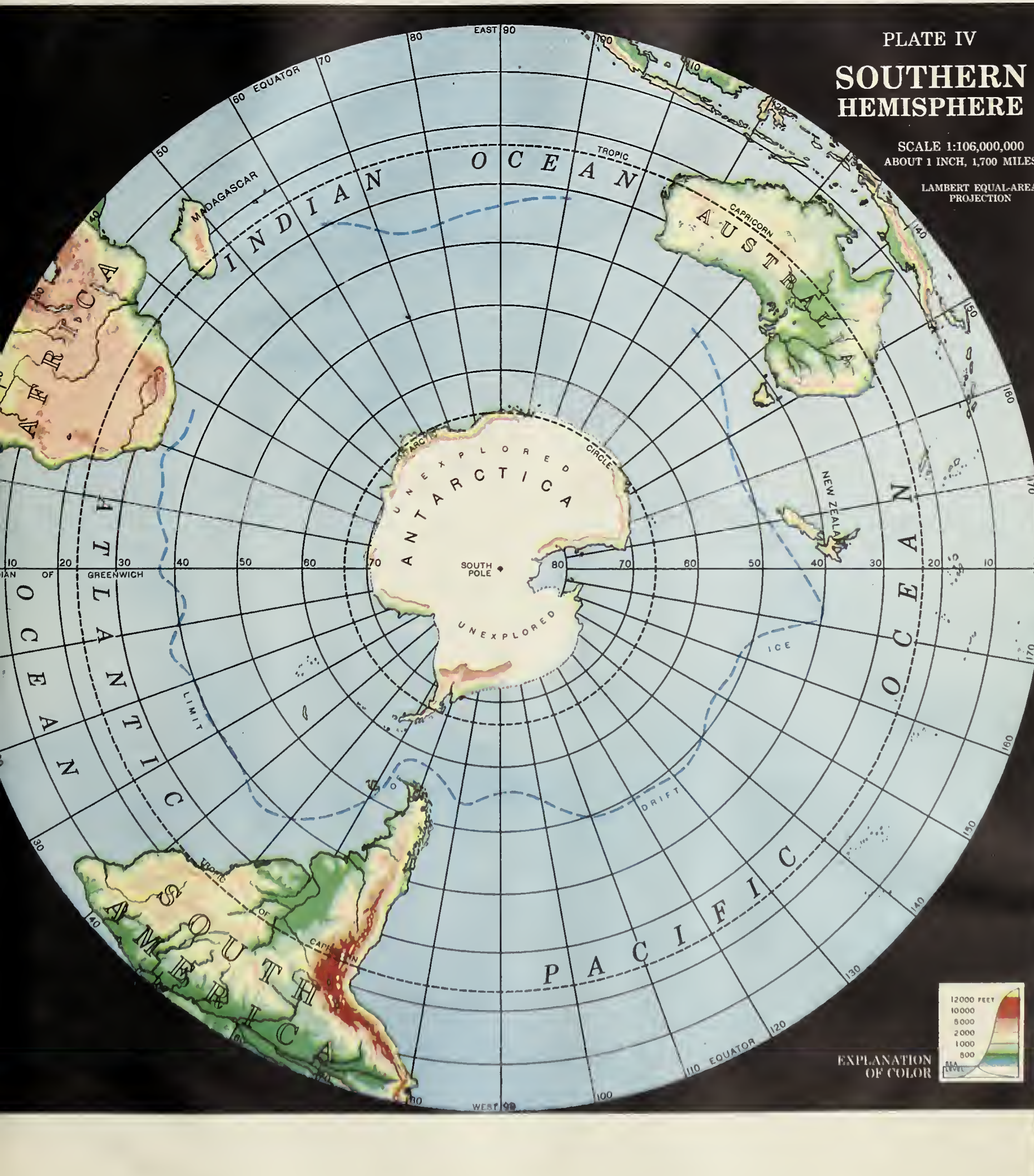
EXPLANATION OF COLOR

PLATE IV

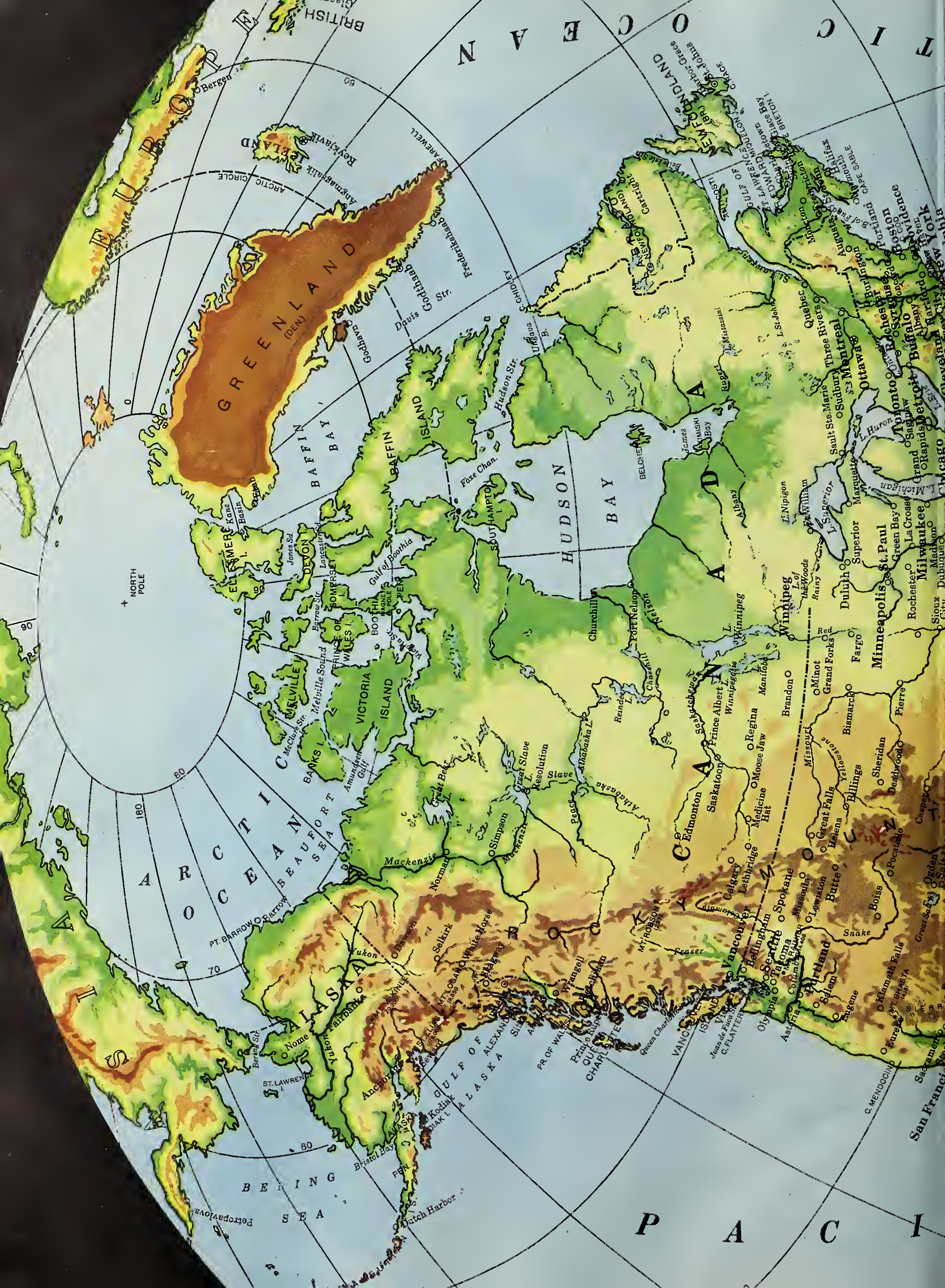
SOUTHERN HEMISPHERE

SCALE 1:106,000,000
ABOUT 1 INCH, 1,700 MILES

LAMBERT EQUAL-AREA
PROJECTION



EXPLANATION
OF COLOR


EUROPE
BRITISH
Bergen
ICELAND
Reykjavik
Angmagsalik
ARCTIC CIRCLE
FAREWELL
GREENLAND
(DEN.)
Frederikshaab
Godthaab
Godhavn
Davis Str.
Etah
Kane Basin
ELLESMERE I.
NORTH POLE
90
80
70
60
180
0
DEVON
Jones Sd.
Lancaster Sd.
BAFFIN BAY
BAFFIN ISLAND
Hudson Str.
C. CHIDLEY
Ungava B.
Foxe Chan.
SOUTHAMPTON
Gulf of Boothia
SOMERSET I.
BOOTHIA
PEN.
Barrow Str.
PRINCE OF WALES I.
MELVILLE I.
Melville Sound
McClure Str.
BANKS I.
VICTORIA ISLAND
Amundsen Gulf
ARCTIC OCEAN
BEAUFORT SEA
PT. BARROW
Barrow
HUDSON BAY
James Bay
BELCHER
Churchill
Port Nelson
Nelson
Albany
Rupert
L. Mistassini
LABRADOR
NEWFOUNDLAND
Cartwright
Belle Isle Str.
St. Johns
Harbor Grace
C. RACE
GULF OF ST. LAWRENCE
ANTICOSTI
PRINCE EDWARD I.
Charlottetown
C. BRETON I.
Glace Bay
Halifax
Yarmouth
CAPE SABLE
Moncton
St. John
B. of Fundy
Augusta
Portland
Boston
Providence
New York
Quebec
Three Rivers
Montreal
Ottawa
Burlington
Rochester
Syracuse
Buffalo
Albany
Toronto
Detroit
Sudbury
Sault Ste. Marie
L. Huron
Saginaw
Grand Rapids
L. Michigan
Chicago
Cleveland
Marquette
L. Superior
Ft. William
L. Nipigon
Superior
Duluth
St. Paul
Minneapolis
Green Bay
Milwaukee
La Crosse
Madison
Dubuque
Rochester
Sioux City
L. of the Woods
Rainy
Winnipeg
L. Winnipeg
L. Winnipegosis
L. Manitoba
Red
Grand Forks
Fargo
Minot
Brandon
Regina
Moose Jaw
Prince Albert
Saskatoon
Saskatchewan
Reindeer L.
Churchill
Athabaska L.
Athabaska
Great Slave L.
Resolution
Slave
Peace
Great Bear L.
Simpson
Mackenzie
Norman
CANADA
Edmonton
Medicine Hat
Calgary
Lethbridge
Bismarck
Pierre
Missouri
Yellowstone
Billings
Sheridan
Deadwood
Casper
Great Falls
Helena
Butte
Missoula
Lewiston
Spokane
Pocatello
Boise
Snake
Ogden
Great Salt L.
Salt Lake
ROCKY MTS.
MT. ROBSON
Fraser
Vancouver
Bellingham
Seattle
Tacoma
Olympia
Portland
Salem
Eugene
Astoria
Columbia
Klamath Falls
MT. SHASTA
Eureka
Sacramento
San Francisco
C. MENDOCINO
VANCOUVER ISLAND
Victoria
Juan de Fuca Str.
C. FLATTERY
Queen Charlotte Sd.
QUEEN CHARLOTTE I.
Prince Rupert
PR. OF WALES I.
Wrangell
Juneau
Sitka
ALEXANDER ARCH.
Skagway
White Horse
Selkirk
Dawson
Yukon
MT. LOGAN
MT. ST. ELIAS
MT. McKINLEY
Fairbanks
ALASKA
Nome
Bering Str.
ST. LAWRENCE I.
Anchorage
Seward
GULF OF ALASKA
Kodiak
KODIAK I.
Bristol Bay
ALASKA PEN.
Dutch Harbor
BERING SEA
Petropavlovsk
ASIA
ATLANTIC OCEAN
PACIFIC

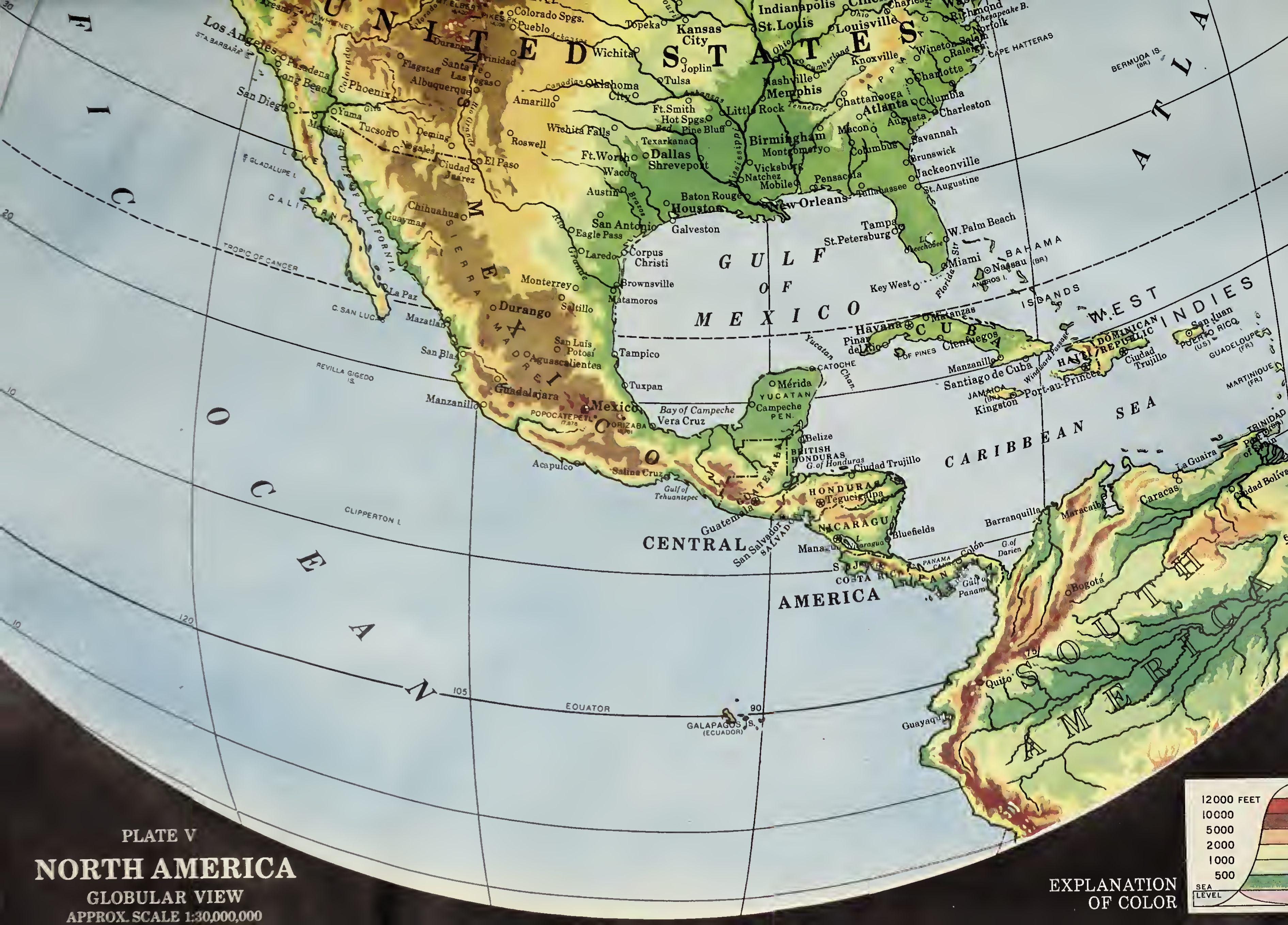


PLATE V

NORTH AMERICA

GLOBULAR VIEW

APPROX. SCALE 1:30,000,000

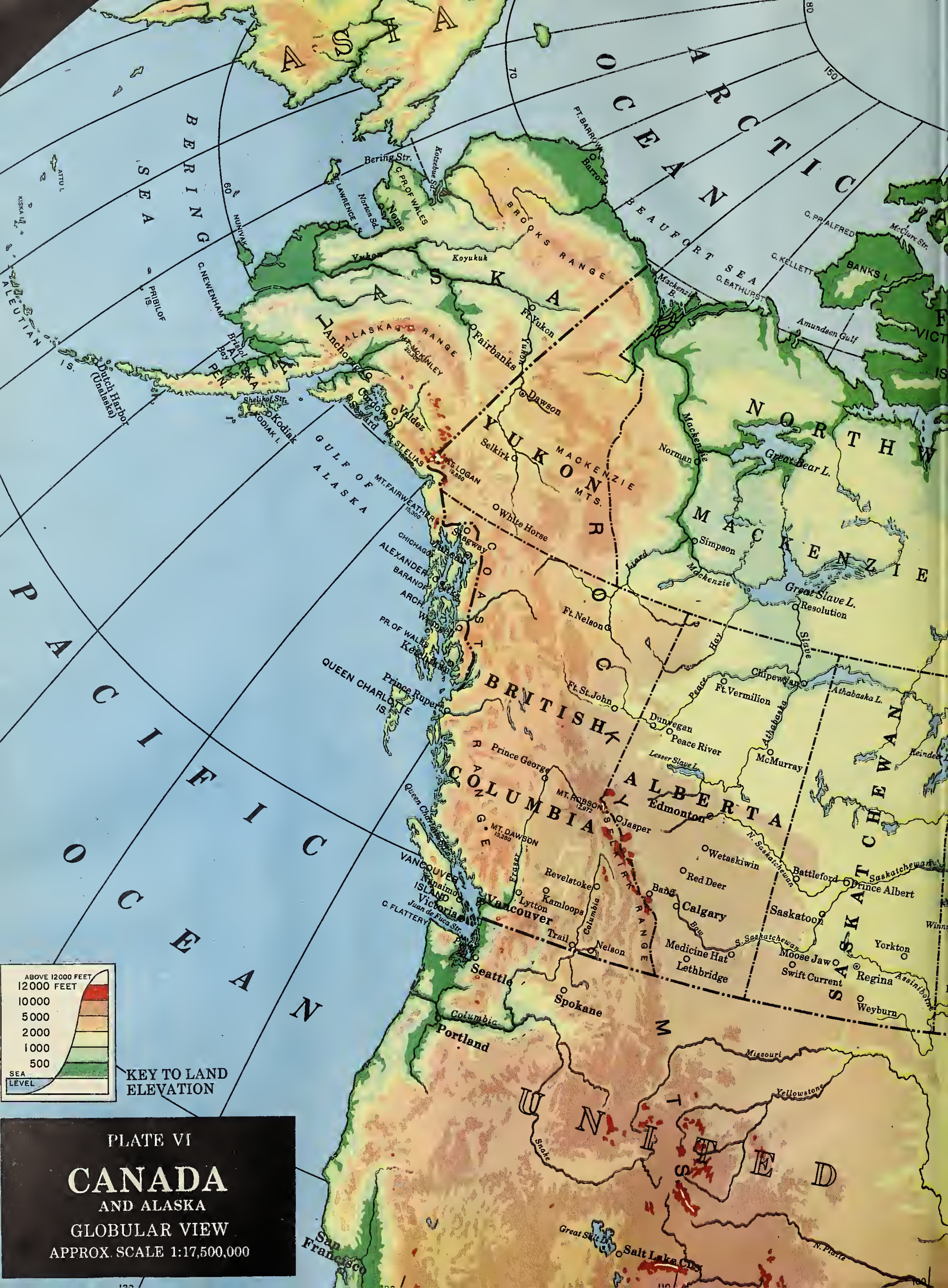


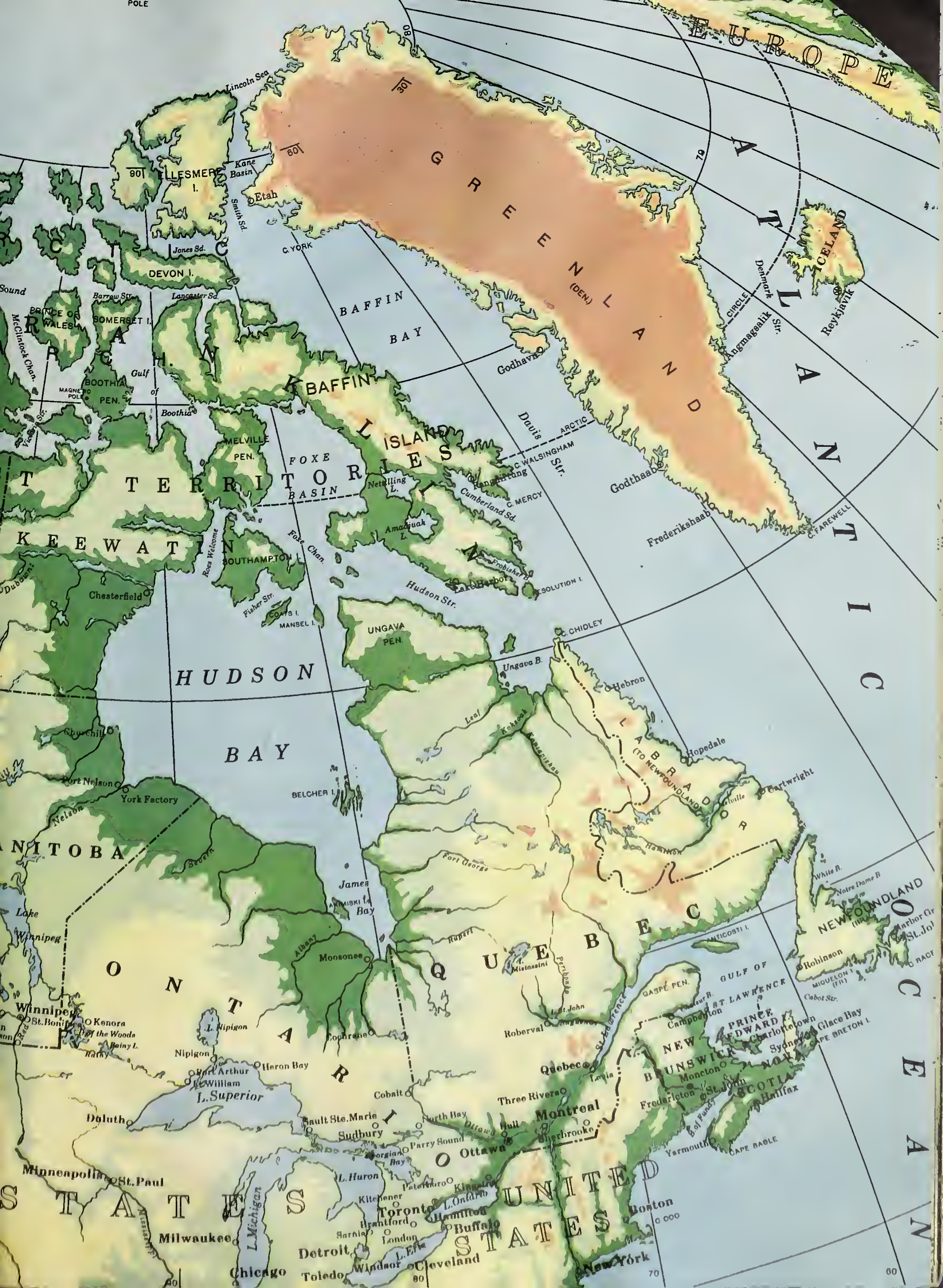
PLATE VI

CANADA

AND ALASKA

GLOBULAR VIEW

APPROX. SCALE 1:17,500,000


POLE
EUROPE
Lincoln Sea
80
30
GREENLAND
(DEN.)
ELLESMERE I.
90
Kane Basin
Etah
Smith Sd.
C. YORK
Jones Sd.
DEVON I.
Sound
Barrow Str.
Lancaster Sd.
PRINCE OF WALES I.
SOMERSET I.
McClintock Chan.
MAGNETIC POLE
BOOTHIA PEN.
Gulf of Boothia
BAFFIN BAY
BAFFIN ISLAND
Godhavn
Davis Str.
ARCTIC CIRCLE
C. WALSINGHAM
Pangnirtung
Cumberland Sd.
C. MERCY
Godthaab
Frederikshaab
C. FAREWELL
Denmark Str.
Angmagssalik
ICELAND
Reykjavik
ATLANTIC OCEAN
70
MELVILLE PEN.
FOXE BASIN
Nettilling L.
Amadjuak L.
Victoria Str.
TERRITORIES
KEEWATIN
FRANKLIN
Roes Welcome
SOUTHAMPTON I.
Foxe Chan.
Frobisher B.
Lake Harbor
RESOLUTION I.
Hudson Str.
Dubawnt
Chesterfield
Fisher Str.
COATS I.
MANSEL I.
UNGAVA PEN.
C. CHIDLEY
Ungava B.
HUDSON BAY
Hebron
Leaf
Koksoak
Kaniapiskau
LABRADOR (TO NEWFOUNDLAND)
Hopedale
Churchill
Port Nelson
York Factory
Nelson
BELCHER I.
Melville
Cartwright
Hamilton
MANITOBA
Severn
Fort George
James Bay
Akimiski I.
Albany
Moosonee
Rupert
L. Mistassini
Peribonka
QUEBEC
White B.
Notre Dame B.
NEWFOUNDLAND
ANTICOSTI I.
Harbor Gr.
St. John's
RACE
Robinson
Lake Winnipeg
ONTARIO
GASPE PEN.
GULF OF ST. LAWRENCE
MIQUELON I. (FR.)
Cabot Str.
Winnipeg
St. Boniface
Kenora
L. of the Woods
Rainy L.
Rainy
Red
L. Nipigon
Nipigon
Cochrane
Lake St. John
Roberval
St. Lawrence
Campbellton
PRINCE EDWARD I.
Charlottetown
Glace Bay
Sydney
CAPE BRETON I.
NEW BRUNSWICK
NOVA SCOTIA
Moncton
Port Arthur
Fort William
Heron Bay
Quebec
Levis
L. Superior
Cobalt
Three Rivers
Fredericton
St. John
Halifax
Duluth
Sault Ste. Marie
North Bay
Montreal
Sudbury
Ottawa
Hull
Sherbrooke
B. of Fundy
Yarmouth
CAPE SABLE
Georgian Bay
Parry Sound
Minneapolis
St. Paul
L. Huron
Peterboro
Kingston
UNITED STATES
Kitchener
L. Ontario
Toronto
Hamilton
Brantford
Buffalo
Boston
0 000
Mississippi
Milwaukee
L. Michigan
Sarnia
London
L. Erie
Detroit
Windsor
Cleveland
Chicago
Toledo
New York
80
90
60

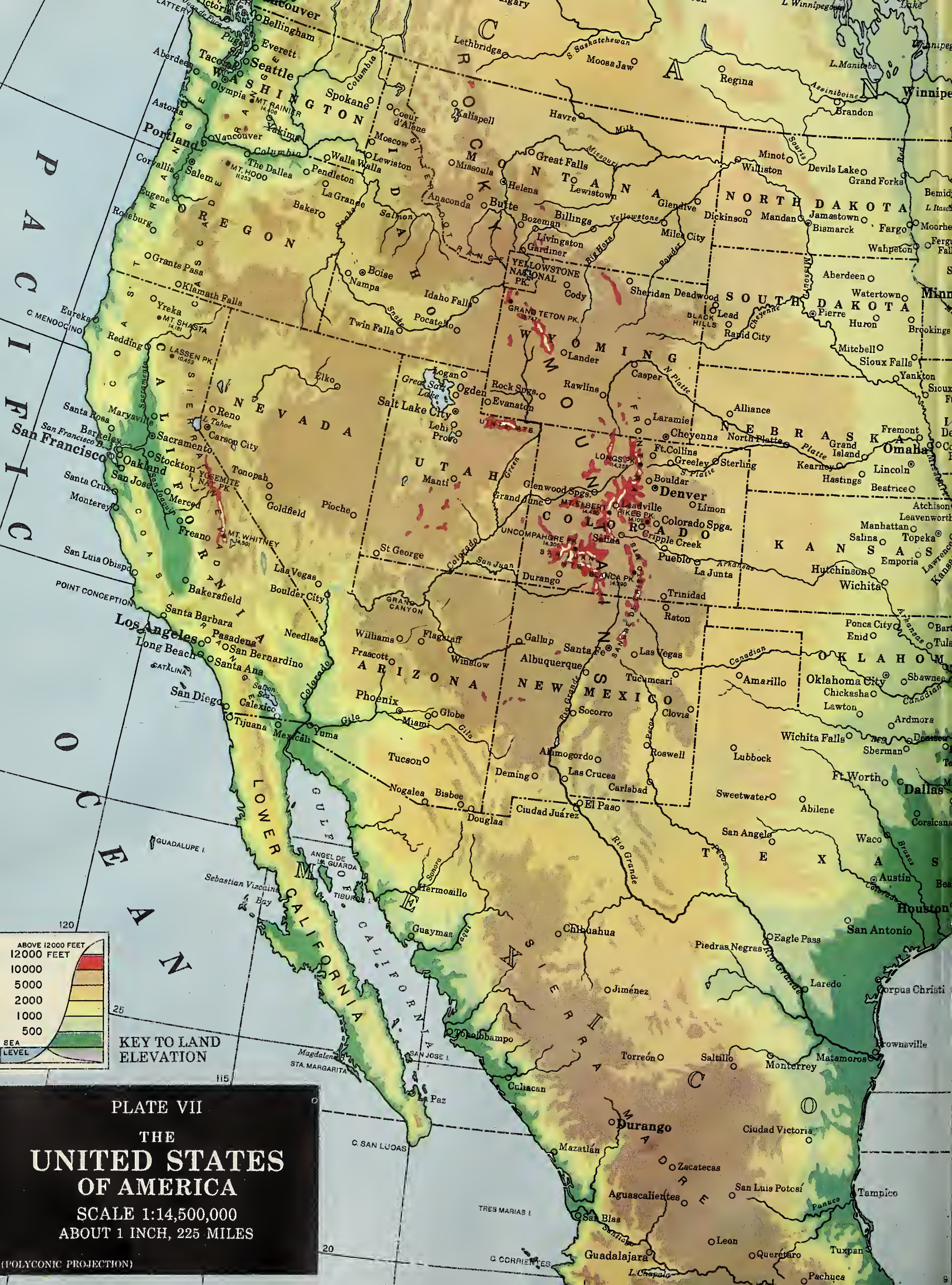


PLATE VII

THE

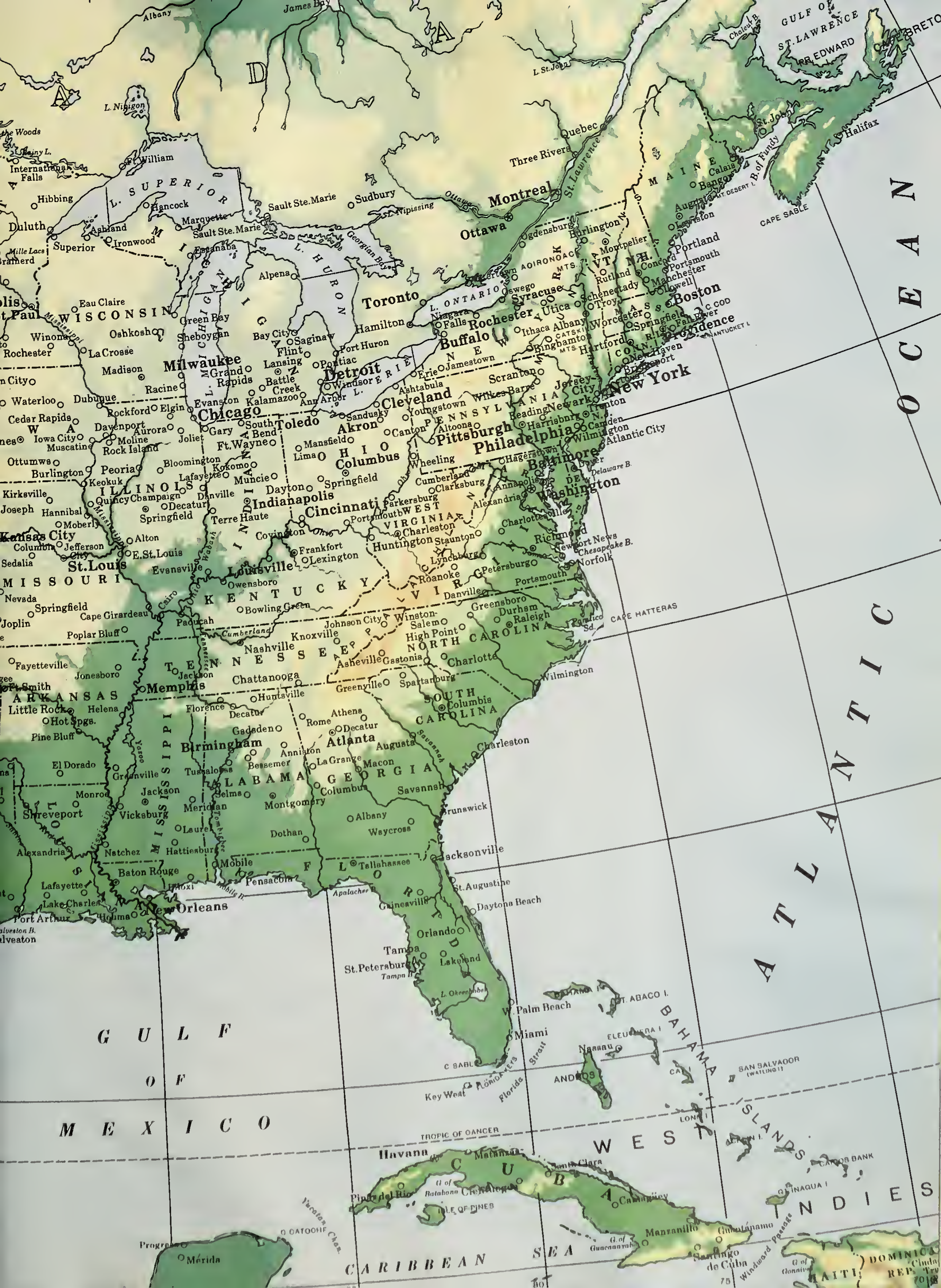
UNITED STATES

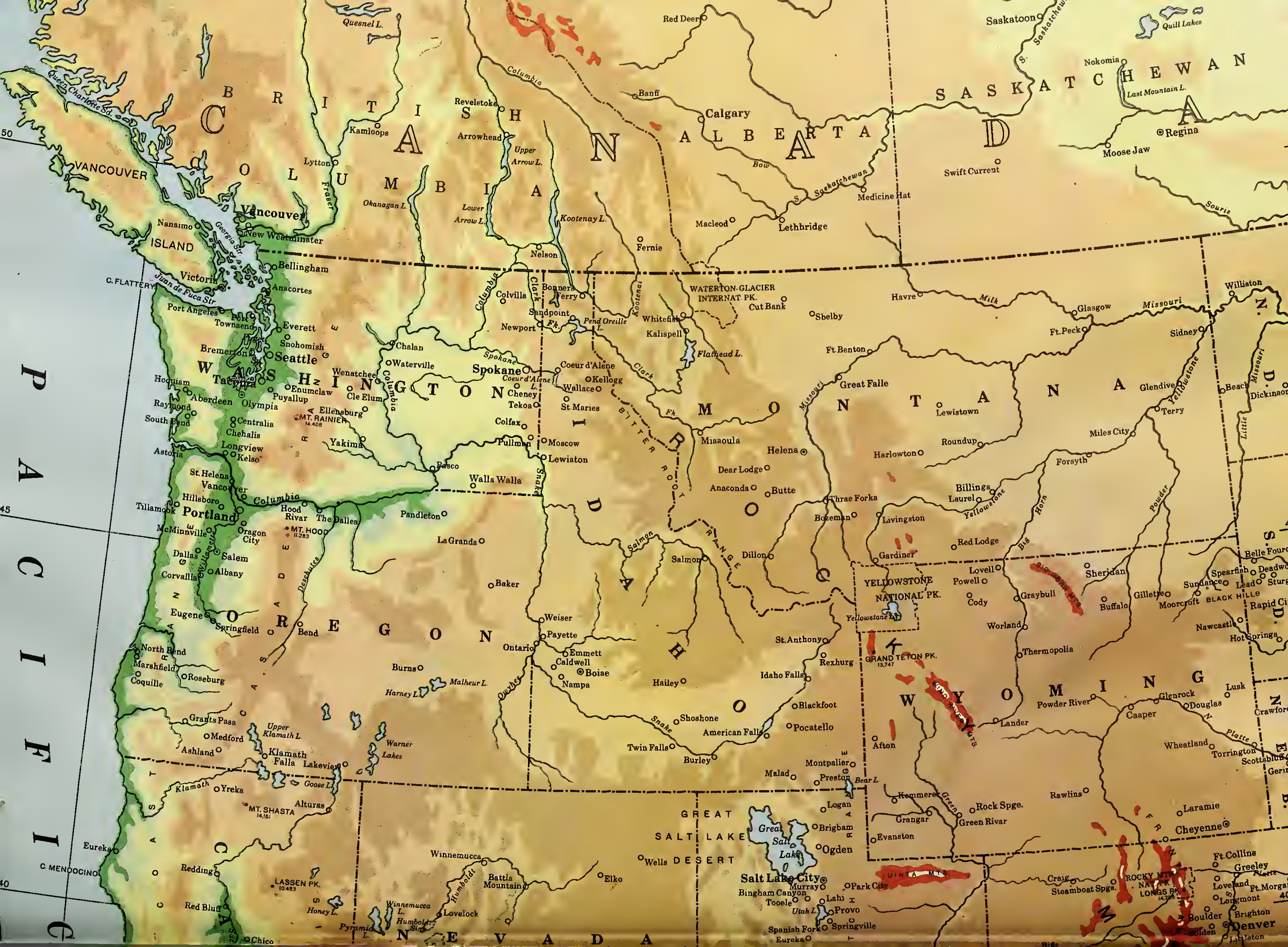
OF AMERICA

SCALE 1:14,500,000

ABOUT 1 INCH, 225 MILES

(POLYCONIC PROJECTION)


James Bay
Albany
C A N A D A
L. Nipigon
L. of the Woods
Rainy L.
Ft. William
International Falls
Hibbing
Duluth
Superior
L. SUPERIOR
Hancock
Ashland
Ironwood
Marquette
Sault Ste. Marie
Escanaba
Sudbury
L. Nipissing
Georgian Bay
L. HURON
Alpena
Ottawa
Montreal
Three Rivers
Quebec
L. St. John
St. Lawrence
Chaleur B.
GULF OF ST. LAWRENCE
PR. EDWARD I.
CAPE BRETON
St. John
Halifax
B. of Fundy
Calais
Bangor
MT. DESERT I.
CAPE SABLE
M A I N E
Augusta
Lewiston
Portland
Portsmouth
Concord
Manchester
Lowell
Boston
C. COD
NANTUCKET I.
Providence
Fall River
Springfield
Worcester
MASS.
Burlington
Montpelier
VT.
N.H.
Rutland
Ogdensburg
ADIRONDACK MTS.
Watertown
Oswego
Syracuse
Utica
Schenectady
Troy
Albany
Ithaca
CATSKILL MTS.
Binghamton
Hartford
CONN.
R.I.
New Haven
Bridgeport
N E W Y O R K
L. ONTARIO
Toronto
Hamilton
Niagara Falls
Rochester
Buffalo
Jamestown
Erie
Scranton
Wilkes-Barre
Jersey City
New York
Newark
Trenton
N.J.
Camden
Wilmington
Atlantic City
Dover
DEL.
Delaware B.
P E N N S Y L V A N I A
Reading
Harrisburg
Philadelphia
Altoona
Pittsburgh
Hagerstown
Baltimore
M D.
Annapolis
Washington
Alexandria
Cumberland
Clarksburg
Wheeling
WEST VIRGINIA
Parkersburg
Charleston
Huntington
Staunton
Charlottesville
Richmond
Newport News
Chesapeake B.
Norfolk
Portsmouth
Petersburg
Lynchburg
Roanoke
Danville
V I R G I N I A
A P P A L A C H I A N
Greensboro
Durham
Raleigh
Winston-Salem
High Point
NORTH CAROLINA
Pamlico Sd.
CAPE HATTERAS
Charlotte
Gastonia
Asheville
Wilmington
SOUTH CAROLINA
Columbia
Spartanburg
Greenville
Charleston
Savannah
Augusta
Athens
Atlanta
Decatur
Rome
G E O R G I A
Macon
LaGrange
Columbus
Savannah
Brunswick
Albany
Waycross
Dothan
Jacksonville
St. Augustine
Daytona Beach
Tallahassee
Apalachee B.
Gainesville
F L O R I D A
Orlando
Tampa
St. Petersburg
Tampa B.
Lakeland
L. Okeechobee
W. Palm Beach
Miami
C. SABLE
Key West
FLORIDA KEYS
Florida Strait
GRAND BAHAMA
GT. ABACO I.
ELEUTHERA I.
Nassau
ANDROS I.
CAT I.
SAN SALVADOR (WATLING I.)
BAHAMA ISLANDS
LONG I.
ACKLIN I.
CAICOS BANK
GT. INAGUA I.
TROPIC OF CANCER
W E S T I N D I E S
Havana
Matanzas
Santa Clara
C U B A
G. of Batabano
Cienfuegos
Pinar del Rio
ISLE OF PINES
Camaguey
Manzanillo
G. of Guacanayabo
Guantanamo
Santiago de Cuba
Windward Passage
G. of Gonaives
HAITI
DOMINICAN REP.
Ciudad Trujillo
Yucatan Chan.
C. CATOCHE
Progreso
Merida
C A R I B B E A N S E A
G U L F O F M E X I C O
A T L A N T I C O C E A N
Milwaukee
W I S C O N S I N
Eau Claire
St. Paul
Minneapolis
Winona
Rochester
La Crosse
Madison
Oshkosh
Green Bay
Sheboygan
Racine
Mississippi
Mille Lacs
Brainerd
M I C H I G A N
L. MICHIGAN
Bay City
Saginaw
Flint
Port Huron
Lansing
Pontiac
Grand Rapids
Battle Creek
Kalamazoo
Detroit
Windsor
L. ERIE
Ann Arbor
Toledo
Sandusky
Ashtabula
Cleveland
Youngstown
Akron
Canton
Mansfield
Lima
O H I O
Columbus
Springfield
Dayton
Cincinnati
Portsmouth
Ohio
Chicago
Evanston
Gary
South Bend
Elgin
Rockford
Joliet
Aurora
Ft. Wayne
I N D I A N A
Kokomo
Muncie
Lafayette
Indianapolis
Terre Haute
Wabash
Dubuque
Davenport
Moline
Rock Island
Muscatine
Iowa City
Cedar Rapids
Waterloo
Mason City
I O W A
Des Moines
Ottumwa
Burlington
Keokuk
Peoria
Bloomington
I L L I N O I S
Quincy
Champaign
Danville
Decatur
Springfield
Hannibal
Moberly
Kirksville
St. Joseph
Kansas City
Columbia
Jefferson City
Sedalia
Alton
E. St. Louis
St. Louis
M I S S O U R I
Nevada
Springfield
Joplin
Cape Girardeau
Poplar Bluff
Cairo
Paducah
Evansville
Owensboro
Louisville
Covington
Frankfort
Lexington
K E N T U C K Y
Bowling Green
Cumberland
Tennessee
Nashville
Knoxville
Johnson City
T E N N E S S E E
Jackson
Memphis
Chattanooga
Huntsville
Florence
Decatur
Gadsden
Anniston
Birmingham
Bessemer
Tuscaloosa
A L A B A M A
Selma
Montgomery
Mobile
Mobile B.
Pensacola
Biloxi
Yazoo
Greenville
M I S S I S S I P P I
Jackson
Vicksburg
Meridian
Laurel
Hattiesburg
Natchez
Tombigbee
Fayetteville
Ft. Smith
Jonesboro
A R K A N S A S
Little Rock
Helena
Hot Spgs.
Pine Bluff
El Dorado
Monroe
Shreveport
L O U I S I A N A
Alexandria
Baton Rouge
Lafayette
Lake Charles
Houma
New Orleans
Port Arthur
Galveston B.
Galveston
Okla.
Tex.


C A N A D A
B R I T I S H
C O L U M B I A
A L B E R T A
S A S K A T C H E W A N
VANCOUVER
ISLAND
Queen Charlotte Sd.
Quesnel L.
Kamloops
Lytton
Fraser
Okanogan L.
Revelstoke
Arrowhead
Upper Arrow L.
Lower Arrow L.
Kootenay L.
Nelson
Columbia
Banff
Calgary
Bow
Red Deer
Fernie
Macleod
Lethbridge
S. Saskatchewan
Medicine Hat
Swift Current
Saskatoon
Saskatchewan
Nokomia
Last Mountain L.
Quill Lakes
Regina
Moose Jaw
Souris
Nanaimo
Georgia Str.
Vancouver
New Westminster
Victoria
C. FLATTERY
Juan de Fuca Str.
Port Angeles
Pt. Townsend
Bellingham
Anacortes
Everett
Snohomish
Seattle
Bremerton
Tacoma
Olympia
Hoquiam
Aberdeen
Raymond
South Bend
Enumclaw
Puyallup
Centralia
Chehalis
Longview
Kelso
Astoria
W A S H I N G T O N
Wenatchee
Cle Elum
Ellensburg
MT. RAINIER 14,408
Yakima
Chelan
Waterville
Spokane
Cheney
Tekoa
Colfax
Pullman
Colvilla
Newport
Sandpoint
Bonners Ferry
Pend Oreille L.
Coeur d'Alene
Kellogg
Wallace
St. Maries
Moscow
Lewiston
Pasco
Walla Walla
Snake
St. Helens
Vancouver
Columbia
Hillsboro
Portland
Tillamook
McMinnville
Oregon City
Hood River
The Dalles
MT. HOOD 11,253
Dallas
Salem
Albany
Corvallis
Willamette
Eugene
Springfield
Deschutes
Pendleton
La Grande
Baker
O R E G O N
C A S C A D E
Bend
Burns
Malheur L.
Harney L.
North Bend
Marshfield
Coquille
Roseburg
Grants Pass
Medford
Ashland
Upper Klamath L.
Klamath Falls
Lakeview
Warner Lakes
Goose L.
Klamath
Yreka
MT. SHASTA 14,161
Alturas
Eureka
C. MENDOCINO
Redding
Red Bluff
Chico
LASSEN PK. 10,453
Honey L.
Pyramid L.
Winnemucca L.
Humboldt Sink
Lovelock
Humboldt
Winnemucca
Battle Mountain
Elko
Wells
N E V A D A
C A
P A C I F I C
I D A H O
Salmon
Weiser
Payette
Ontario
Owyhee
Emmett
Caldwell
Boise
Nampa
Hailey
Shoshone
Twin Falls
Burley
American Falls
Pocatello
Blackfoot
Idaho Falls
Rexburg
St. Anthony
Malad
Montpelier
Preston
Bear L.
B I T T E R R O O T R A N G E
M O N T A N A
WATERTON-GLACIER INTERNAT. PK.
Cut Bank
Shelby
Havre
Milk
Glasgow
Ft. Peck
Missouri
Williston
Sidney
Glendive
Terry
Yellowstone
Miles City
Forsyth
Powder
Big Horn
Billings
Laurel
Roundup
Lewistown
Harlowton
Great Falls
Ft. Benton
Whitefish
Kalispell
Flathead L.
Kootenai
Clark Fk.
Missoula
Helena
Deer Lodge
Anaconda
Butte
Three Forks
Bozeman
Livingston
Dillon
Red Lodge
Gardiner
YELLOWSTONE NATIONAL PK.
Yellowstone L.
GRAND TETON PK. 13,747
W Y O M I N G
Lovell
Powell
Cody
Graybull
Worland
Thermopolia
Sheridan
Buffalo
Gillette
Moorcroft
BLACK HILLS
Sundance
Spearfish
Lead
Deadwood
Sturgis
Rapid City
Newcastle
Hot Springs
Belle Fourche
Lusk
Glenrock
Douglas
Casper
Powder River
Lander
Afton
Kemmerer
Green
Granger
Green River
Rock Spge.
Rawlins
Evanston
Wheatland
Torrington
Scottsbluff
Gering
Platte
Laramie
Cheyenne
Crawford
UINTA MTS.
WIND RIVER MTS.
BIG HORN MTS.
F R O N T
ROCKY MTS. NAT. PK.
LONGS PK.
Ft. Collins
Greeley
Loveland
Longmont
Ft. Morgan
Boulder
Brighton
Golden
Denver
Littleton
Craig
Steamboat Spgs.
Rifle
Logan
Brigham
Ogden
Great Salt Lake
Salt Lake City
Murray
Bingham Canyon
Tooele
Park City
Lehi
Provo
Utah L.
Springville
Spanish Fork
Eureka
G R E A T S A L T L A K E D E S E R T
N. D.
Dickinson
Beach
Little Missouri
S. D.
N E B.
50
45
40

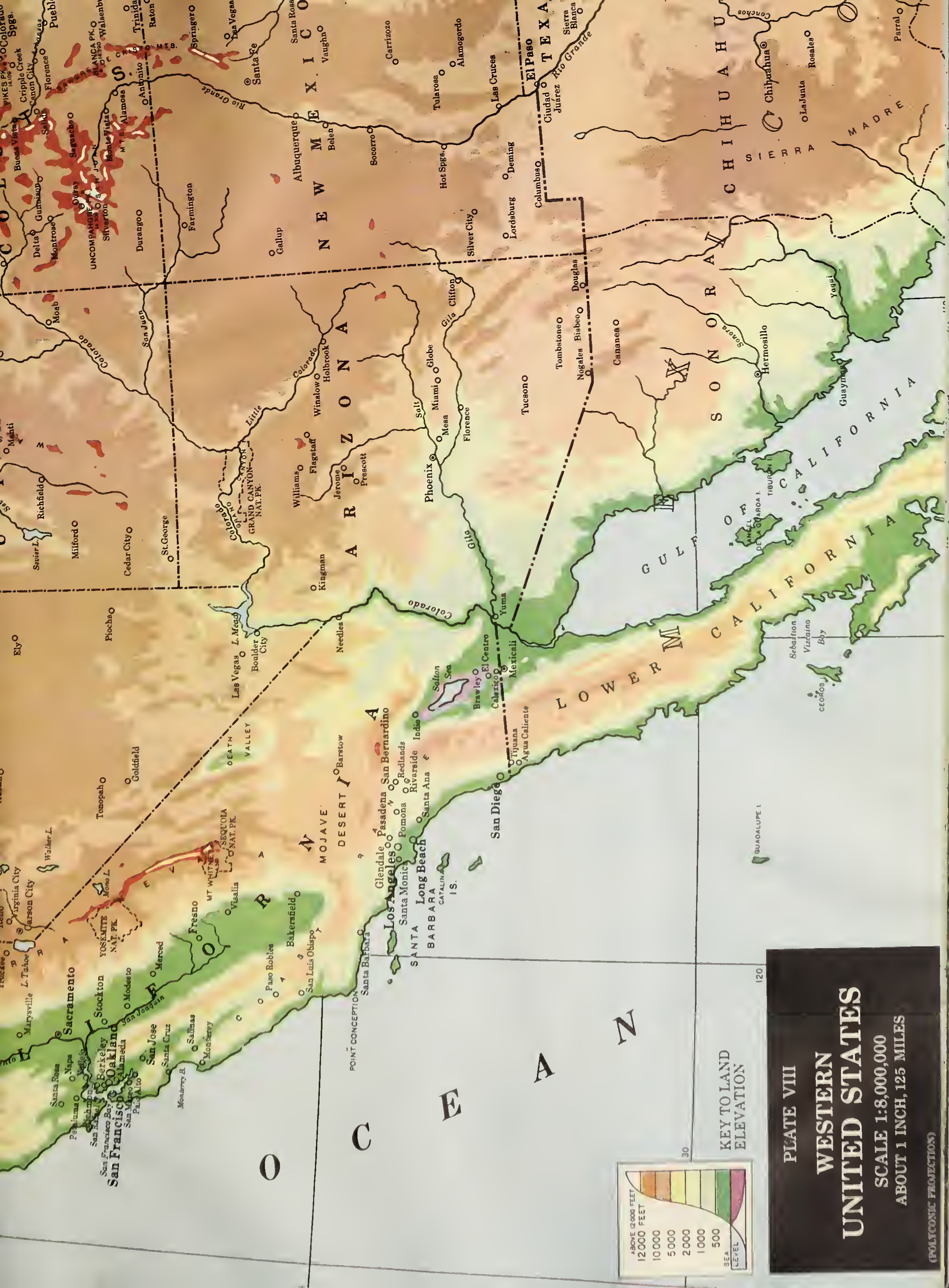
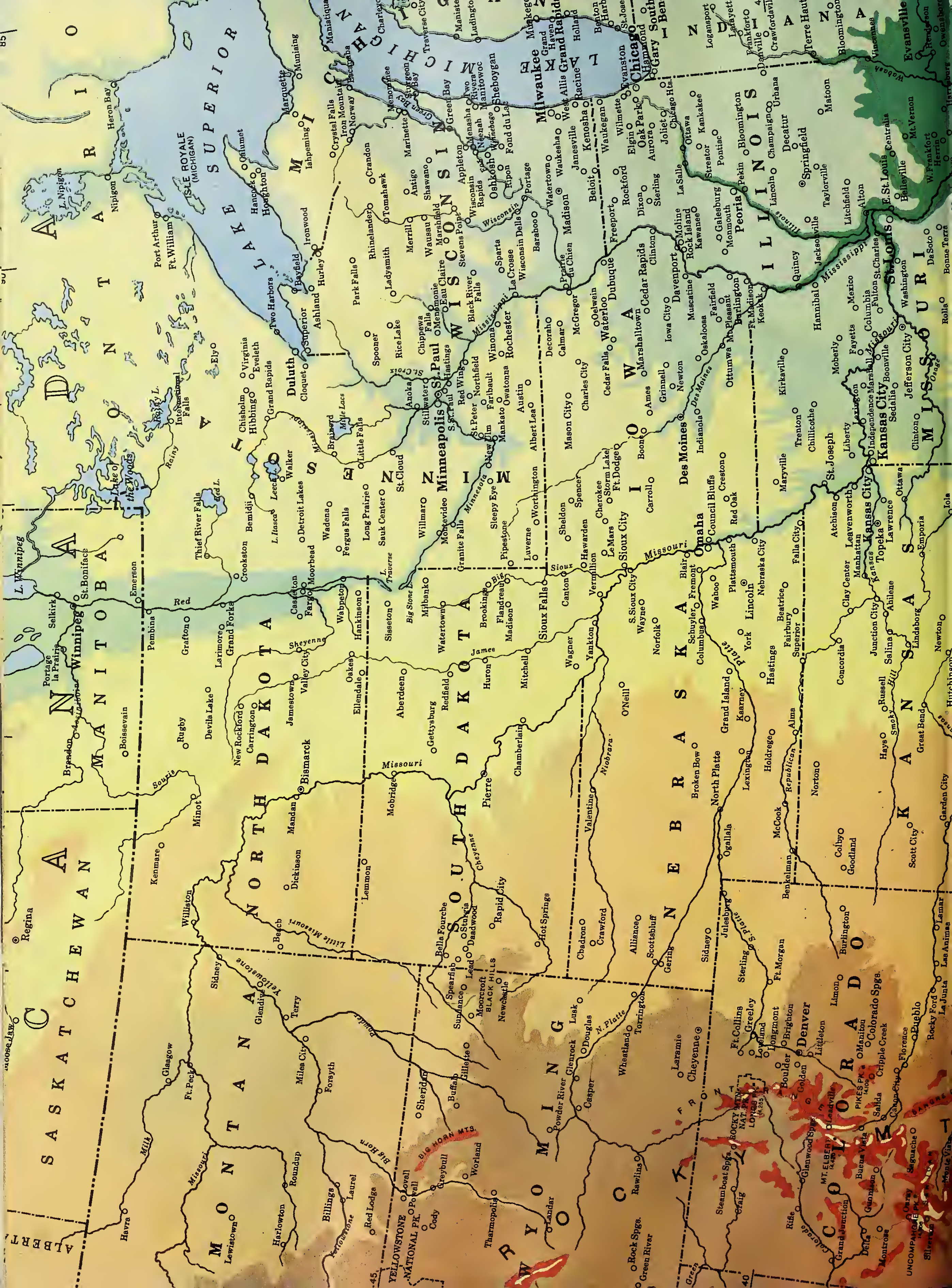


PLATE VIII

WESTERN UNITED STATES

SCALE 1:8,000,000
ABOUT 1 INCH, 125 MILES

(POLYCONIC PROJECTION)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SASKATCHEWAN
MANITOBA
ONTARIO
ALBERTA
MONTANA
NORTH DAKOTA
SOUTH DAKOTA
WYOMING
NEBRASKA
COLORADO
KANSAS
MISSOURI
IOWA
MINNESOTA
WISCONSIN
ILLINOIS
MICHIGAN
INDIANA
LAKE SUPERIOR
LAKE MICHIGAN
L. Winnipeg
Lake of the Woods
L. Nipigon
ISLE ROYALE (MICHIGAN)
Mille Lacs
Missouri
Mississippi
Yellowstone
Red
Platte
N. Platte
Des Moines
Wisconsin
Illinois
Wabash
BLACK HILLS
BIG HORN MTS.
ROCKY MTN. NAT. PK.
PIKES PK. 14,109
MT. ELBERT 14,420
YELLOWSTONE NATIONAL PK
Regina
Winnipeg
Duluth
Minneapolis
St. Paul
Milwaukee
Chicago
Des Moines
Omaha
Lincoln
Kansas City
St. Louis
Denver
Cheyenne
Bismarck
Pierre
Sioux Falls
Madison
Springfield
Topeka
Jefferson City

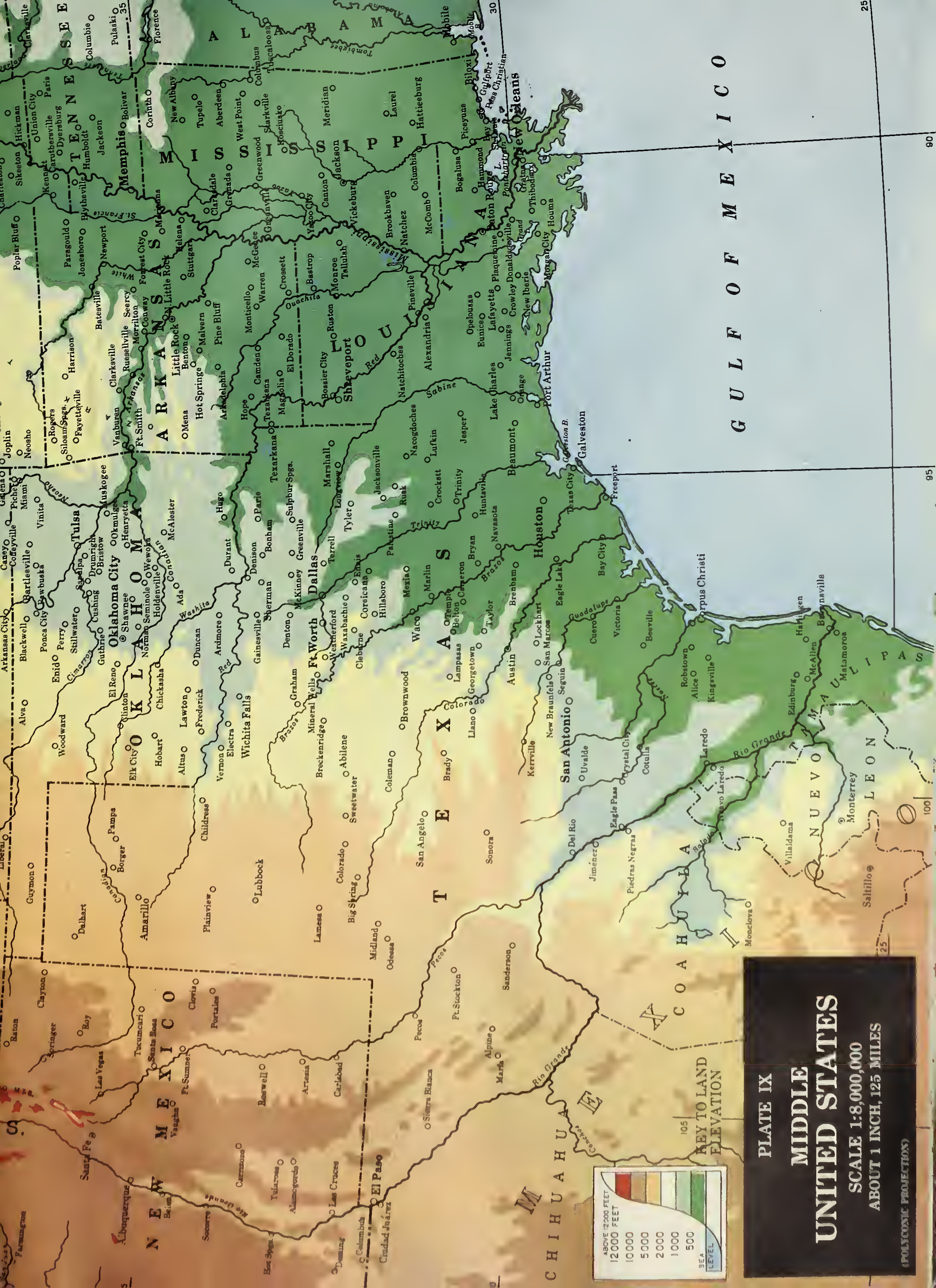


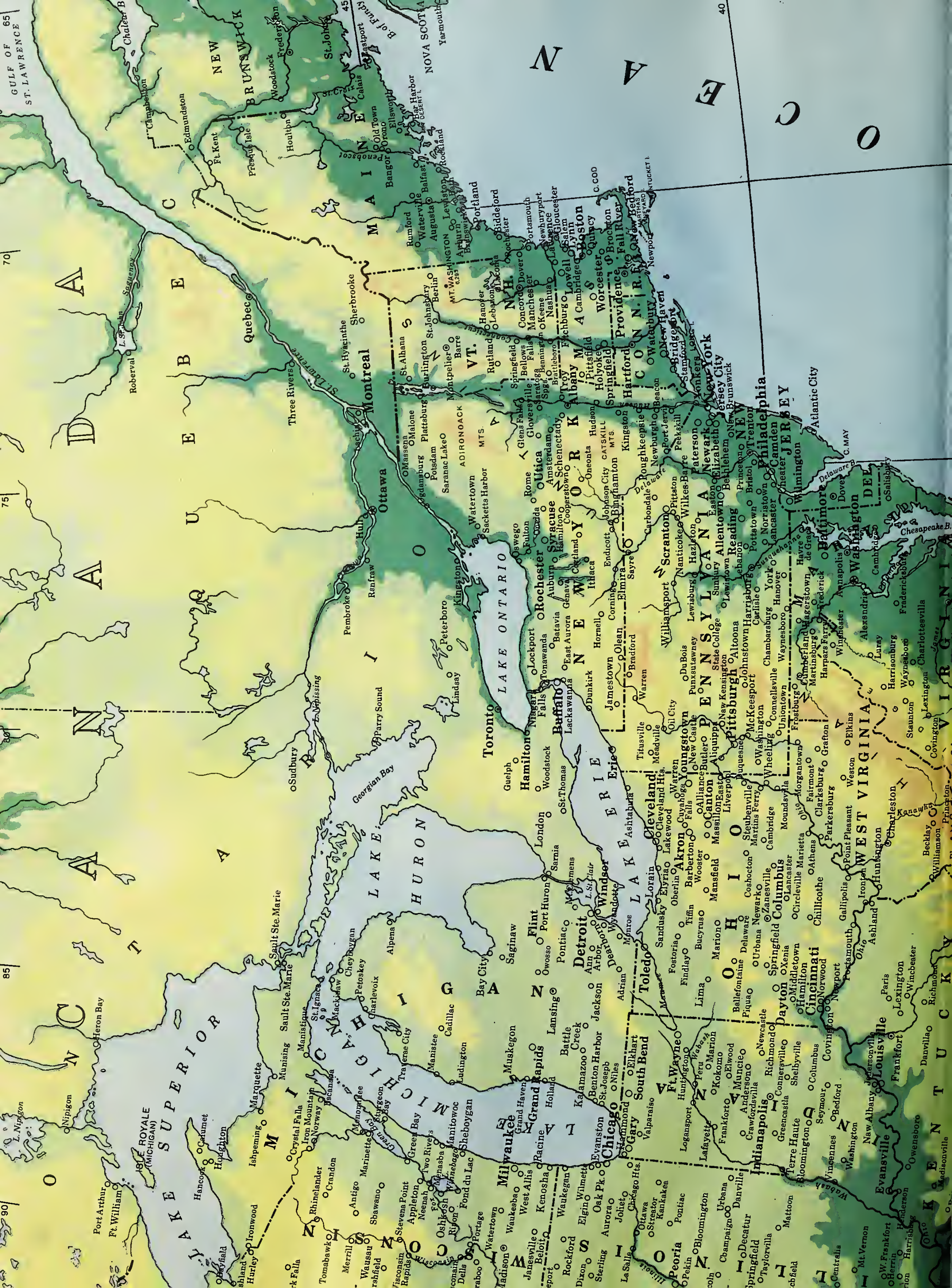
PLATE IX

MIDDLE UNITED STATES

SCALE 1:8,000,000

ABOUT 1 INCH, 125 MILES

(POLYCONIC PROJECTION)


C A N A D A
O N T A R I O
Q U E B E C
NEW BRUNSWICK
NOVA SCOTIA
GULF OF ST. LAWRENCE
B. of Fundy
O C E A N
M A I N E
N.H.
VT.
M A S S.
R.I.
C O N N.
N E W Y O R K
N E W J E R S E Y
P E N N S Y L V A N I A
DEL.
M A R Y L A N D
W E S T V I R G I N I A
V I R G I N I A
O H I O
M I C H I G A N
I N D I A N A
I L L I N O I S
W I S C O N S I N
K E N T U C K Y
LAKE SUPERIOR
LAKE MICHIGAN
LAKE HURON
Georgian Bay
LAKE ERIE
LAKE ONTARIO
Chesapeake B.
Delaware B.
St. Lawrence
ADIRONDACK MTS.
CATSKILL MTS.
MT. WASHINGTON 6,293
C. COD
C. MAY
ISLE ROYALE (MICHIGAN)
Quebec
Montreal
Ottawa
Toronto
Hamilton
Buffalo
Rochester
Syracuse
Albany
Boston
Providence
Hartford
New York
Philadelphia
Baltimore
Washington
Pittsburgh
Cleveland
Columbus
Cincinnati
Toledo
Detroit
Chicago
Milwaukee
Indianapolis
Louisville
Evansville
Peoria
Grand Rapids
South Bend
Ft. Wayne
Dayton
Akron
Youngstown
Erie
Scranton
Harrisburg
Wilmington
Portland
Sault Ste. Marie
Sudbury
Marquette
Port Arthur
Ft. William
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75
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45
40

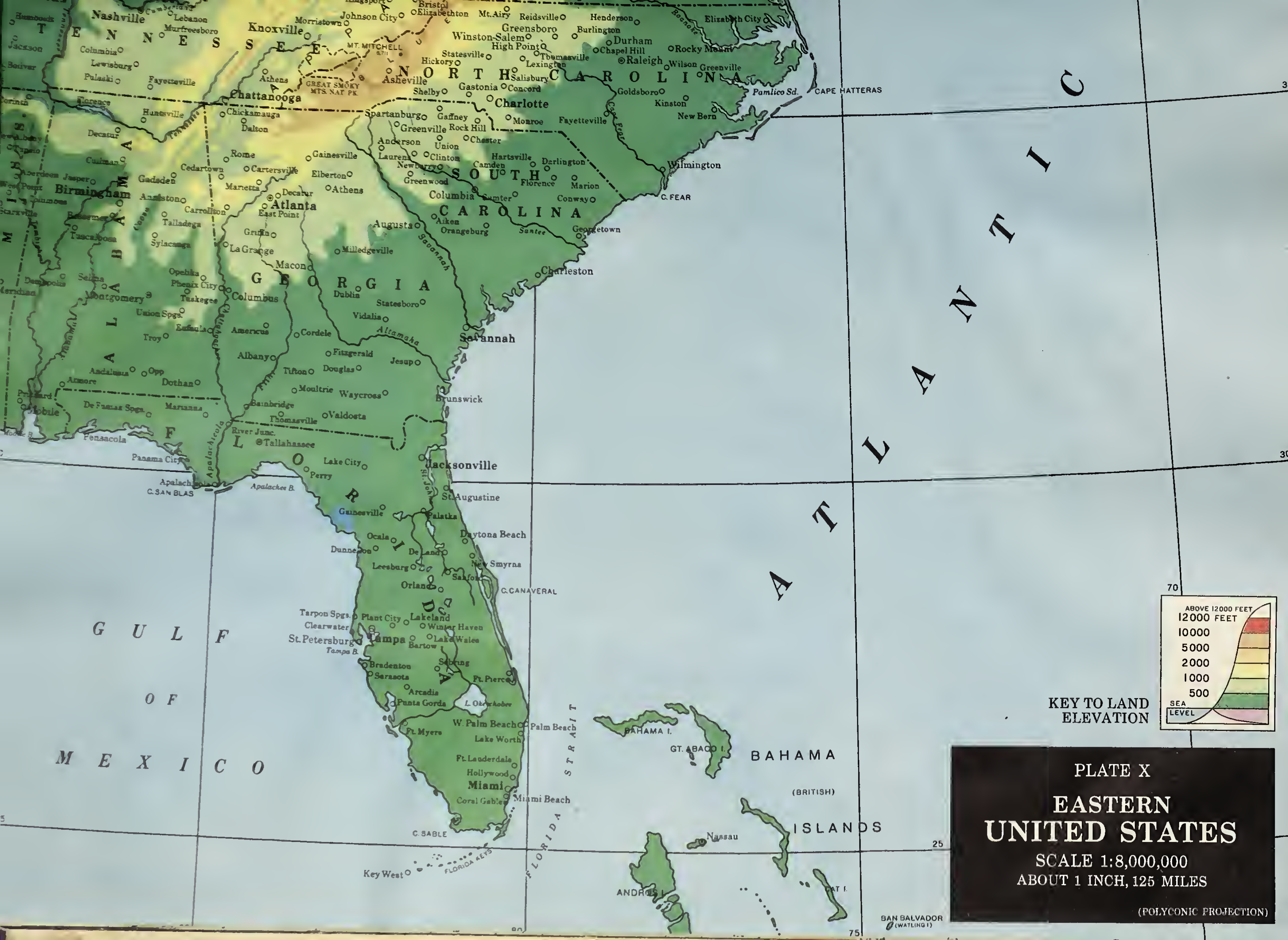


PLATE X

EASTERN UNITED STATES

SCALE 1:8,000,000

ABOUT 1 INCH, 125 MILES

(POLYCONIC PROJECTION)

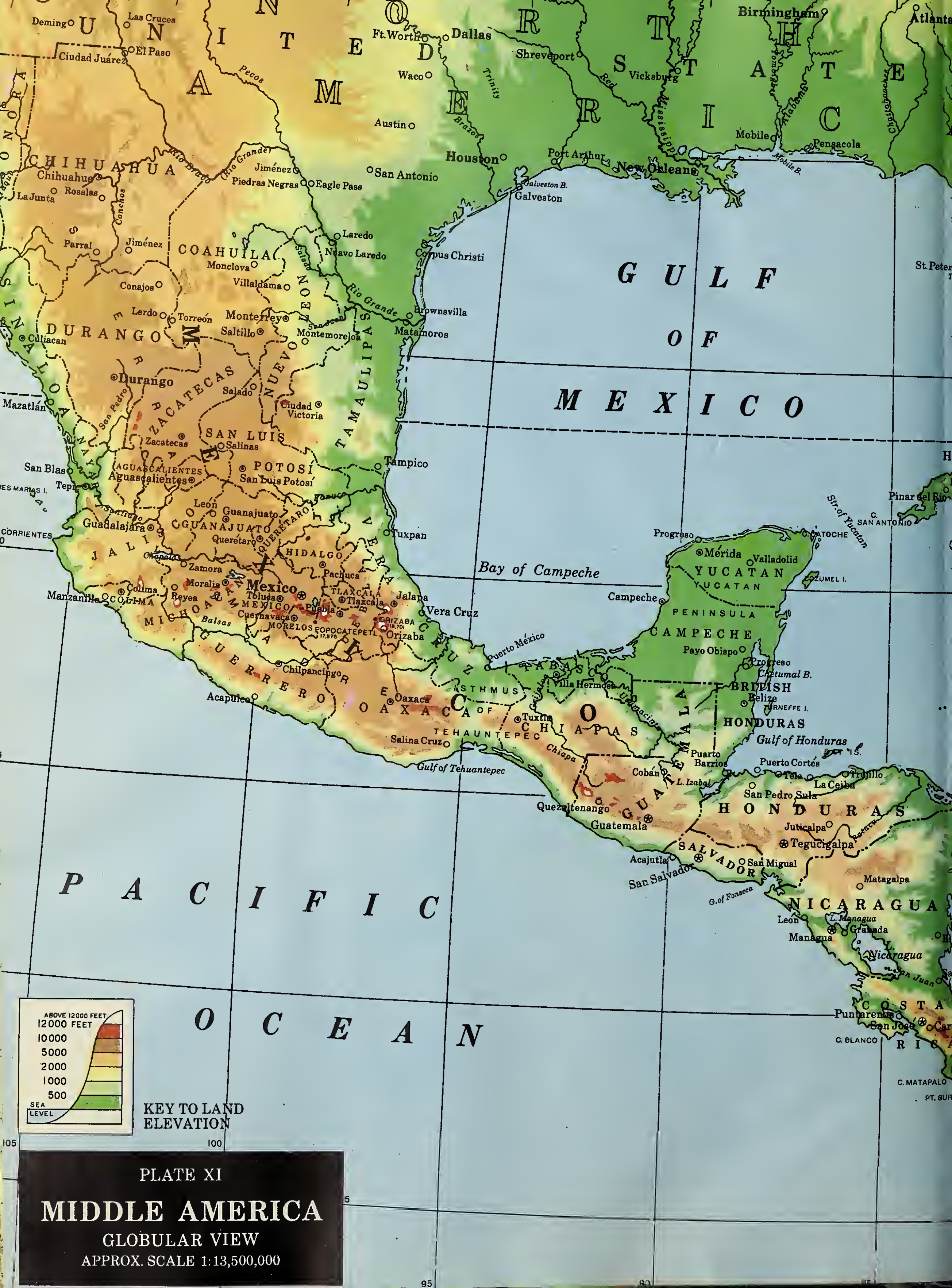
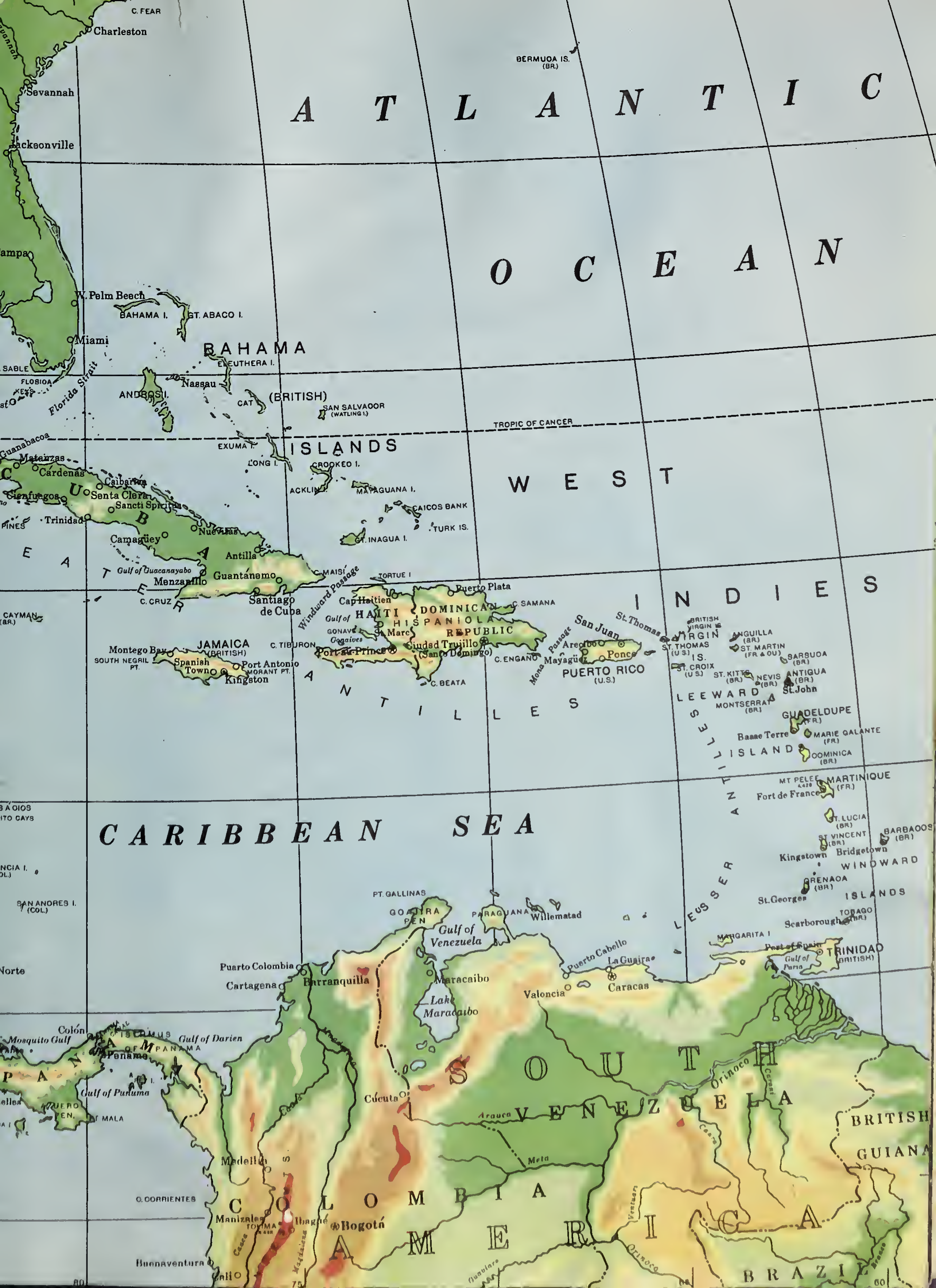


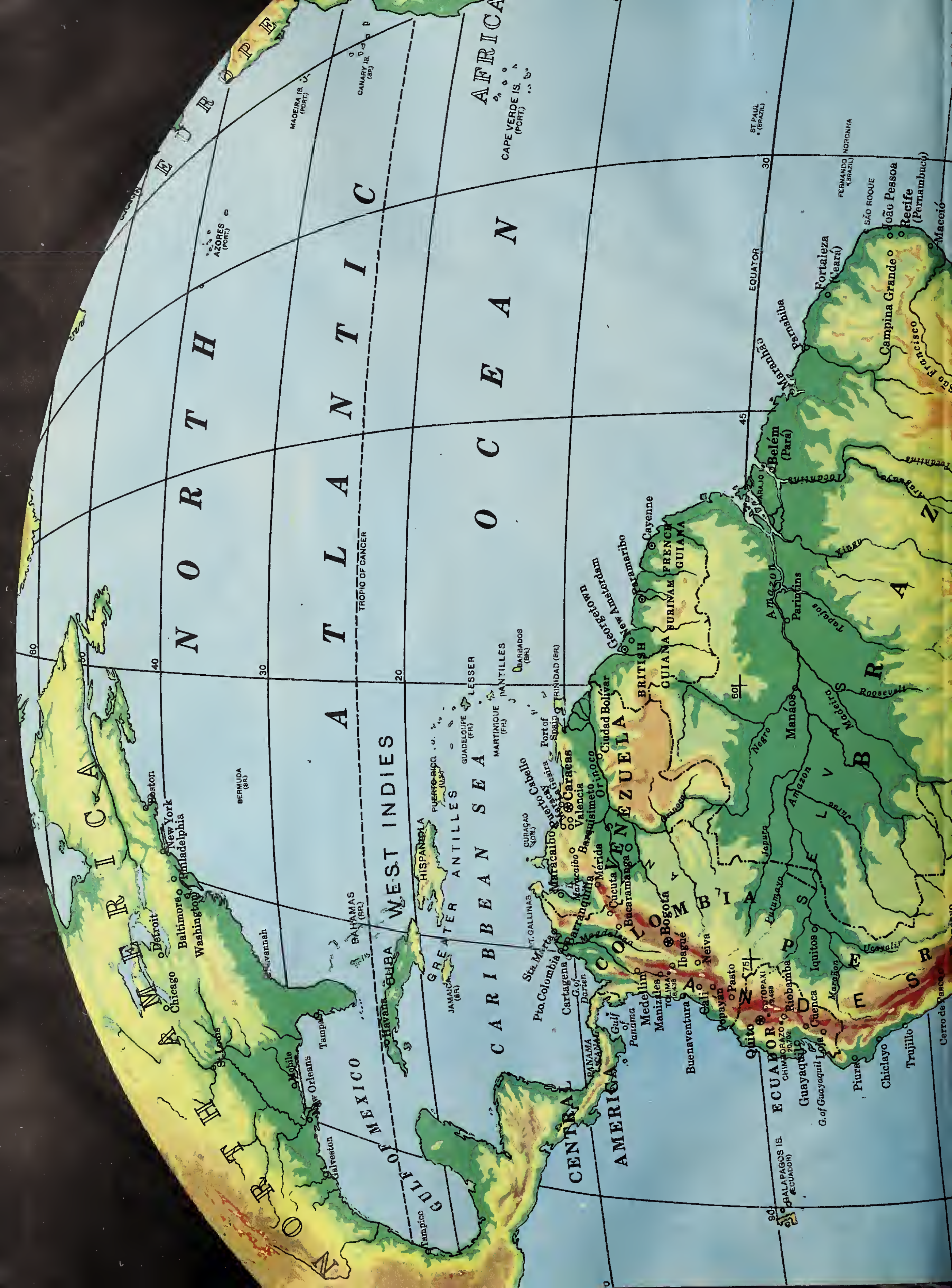
PLATE XI

MIDDLE AMERICA

GLOBULAR VIEW

APPROX. SCALE 1:13,500,000


C. FEAR
Charleston
Savannah
Sevannah
Jacksonville
BERMUDA IS.
(BR.)
ATLANTIC
OCEAN
Tampa
W. Palm Beach
BAHAMA I.
ST. ABACO I.
Miami
BAHAMA
ELEUTHERA I.
SABLE
FLORIDA
KEYS
Florida Strait
Nassau
ANDROS I.
CAT
(BRITISH)
SAN SALVADOR
(WATLING I.)
TROPIC OF CANCER
Guanabacoa
Matanzas
EXUMA
ISLANDS
LONG I.
CROOKED I.
Cardenas
Caibarien
ACKLIN
MAYAGUANA I.
WEST
Cienfuegos
CUBA
Santa Clara
Sancti Spiritus
CAICOS BANK
PINES
Trinidad
TURK IS.
Nuevitas
Camagüey
INAGUA I.
SEA
Antilla
Gulf of Guacanayabo
C. MAISI
TORTUE I
Windward Passage
Puerto Plata
Manzanillo
Guantánamo
C. CRUZ
Santiago de Cuba
Cap Haitien
DOMINICAN
C. SAMANA
INDIES
CAYMAN
(BR.)
Gulf of Gonaives
HAITI
HISPANIOLA
REPUBLIC
San Juan
St. Thomas
BRITISH VIRGIN IS.
VIRGIN
ANGUILLA
(BR.)
ST. MARTIN
(FR. & DU.)
GONAVE
St. Marc
Montego Bay
JAMAICA
(BRITISH)
C. TIBURON
Port-au-Prince
Ciudad Trujillo
(Santo Domingo)
C. ENGANO
Mona Passage
Arecibo
Mayagüez
Ponce
ST. THOMAS
(U.S.)
IS.
BARBUDA
(BR.)
SOUTH NEGRIL PT.
Spanish Town
Port Antonio
MORANT PT.
Kingston
C. BEATA
PUERTO RICO
(U.S.)
ST. CROIX
(U.S.)
ST. KITTS
(BR.)
NEVIS
(BR.)
ANTIGUA
(BR.)
St. John
ANTILLES
LEEWARD
MONTSERRAT
(BR.)
GUADELOUPE
(FR.)
Basse Terre
MARIE GALANTE
(FR.)
ISLAND
DOMINICA
(BR.)
MT. PELEE
4429
MARTINIQUE
(FR.)
Fort de France
RIO DOS
RITO CAYS
CARIBBEAN SEA
ST. LUCIA
(BR.)
BARBADOS
(BR.)
ST. VINCENT
(BR.)
Kingstown
Bridgetown
PROVIDENCIA I.
(COL.)
WINDWARD
GRENADA
(BR.)
SAN ANDRES I.
(COL.)
LESSER
PT. GALLINAS
St. Georges
ISLANDS
GOAJIRA PEN.
PARAGUANA
Willemstad
TOBAGO
(BR.)
Scarborough
Gulf of Venezuela
MARGARITA I.
Port of Spain
TRINIDAD
(BRITISH)
Gulf of Paria
Norte
Puerto Colombia
Puerto Cabello
La Guaira
Cartagena
Barranquilla
Maracaibo
Caracas
Valencia
Lake Maracaibo
Colón
Mosquito Gulf
ISTHMUS OF PANAMA
Gulf of Darien
Panama
PANAMA
SOUTH
Orinoco
Gulf of Panama
AZUERO PEN.
PT. MALA
Cucuta
VENEZUELA
Arauca
BRITISH
GUIANA
Meta
Medellin
C. CORRIENTES
COLOMBIA
Manizales
TOLIMA
Ibagué
Bogotá
AMERICA
Buenaventura
Cali
Orinoco
BRAZIL
80
75
60


NORTH AMERICA
EUROPE
AFRICA
NORTH ATLANTIC OCEAN
GULF OF MEXICO
WEST INDIES
CARIBBEAN SEA
GREATER ANTILLES
LESSER ANTILLES
CENTRAL AMERICA
COLOMBIA
VENEZUELA
ECUADOR
PERU
BRAZIL
BOLIVIA
BRITISH GUIANA
SURINAM
FRENCH GUIANA
TROPIC OF CANCER
EQUATOR
AZORES (PORT.)
MADEIRA IS. (PORT.)
CANARY IS. (SP.)
CAPE VERDE IS. (PORT.)
BERMUDA (BR.)
BAHAMAS (BR.)
CUBA
HISPANIOLA
PUERTO RICO (U.S.)
JAMAICA (BR.)
GUADELOUPE (FR.)
MARTINIQUE (FR.)
BARBADOS (BR.)
TRINIDAD (BR.)
CURAÇAO (NETH.)
GALAPAGOS IS. (ECUADOR)
ST. PAUL (BRAZIL)
FERNANDO NORONHA (BRAZIL)
SÃO ROQUE
PANAMA CANAL
Gulf of Panama
G. of Darien
G. of Guayaquil
PT. GALLINAS
Boston
New York
Philadelphia
Baltimore
Washington
Detroit
Chicago
Savannah
St. Louis
Mobile
New Orleans
Galveston
Tampico
Tampa
Havana
Sta. Marta
Barranquilla
Cartagena
Pto. Colombia
Maracaibo
Lake Maracaibo
Puerto Cabello
La Guaira
Caracas
Valencia
Barquisimeto
Mérida
Cúcuta
Bucaramanga
Ciudad Bolívar
Port of Spain
Georgetown
New Amsterdam
Paramaribo
Cayenne
Medellín
Manizales
TOLIMA 18,438
Ibagué
Bogotá
Neiva
Cali
Buenaventura
Popayán
Pasto
Quito
COTOPAXI 19,498
CHIMBORAZO 20,702
Riobamba
Cuenca
Guayaquil
Loja
Piura
Chiclayo
Trujillo
Cerro de Pasco
Iquitos
Manaos
Parintins
Belém (Pará)
MARAJO
Maranhão
Parnahiba
Fortaleza (Ceará)
Campina Grande
João Pessoa
Recife (Pernambuco)
Maceió
Orinoco
Amazon
Negro
Japura
Putumayo
Marañon
Ucayali
Juruá
Madeira
Roosevelt
Tapajos
Xingu
Tocantins
Araguaya
São Francisco
Meta
90
75
60
45
30
60
50
40
30
20

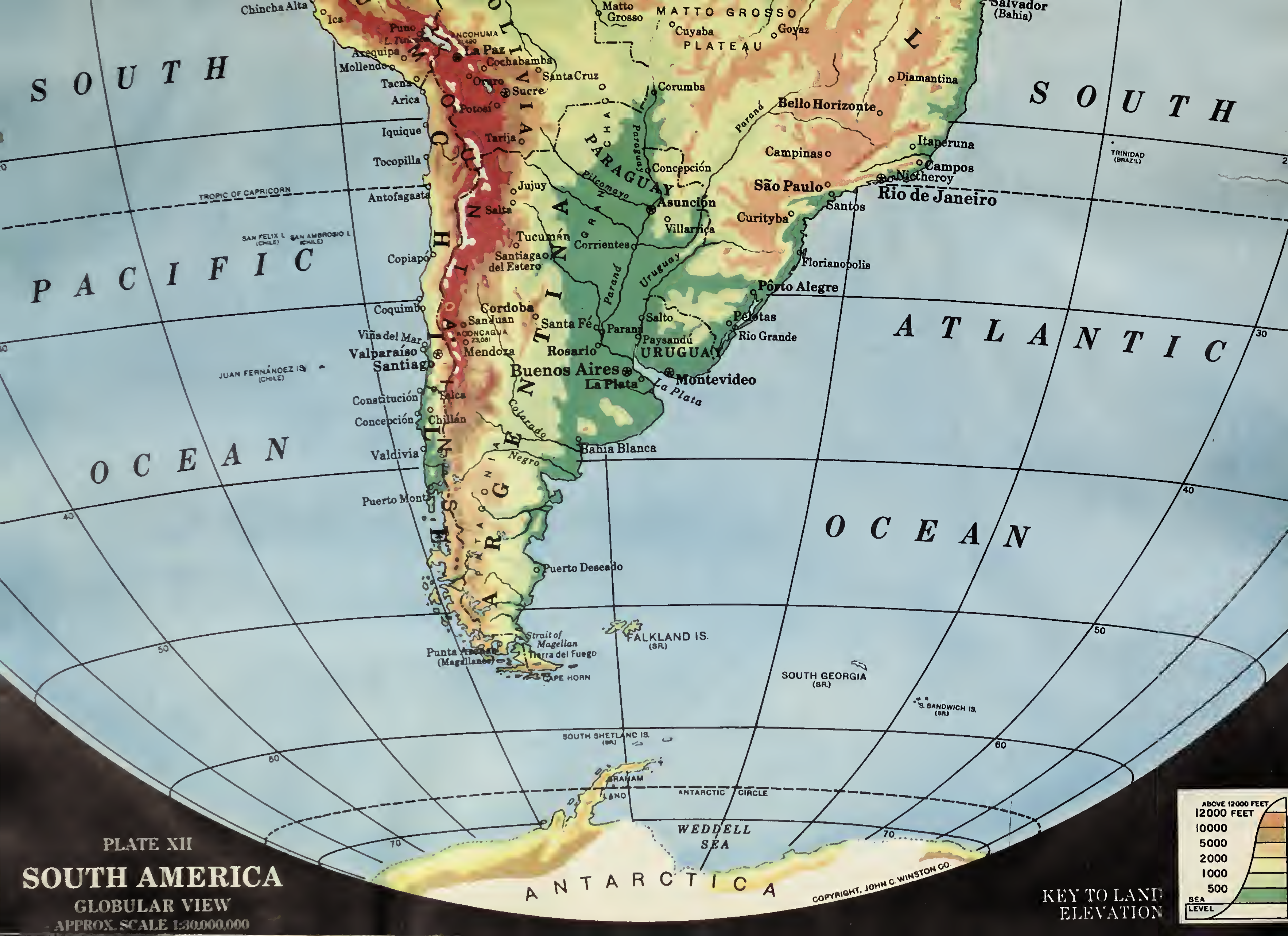
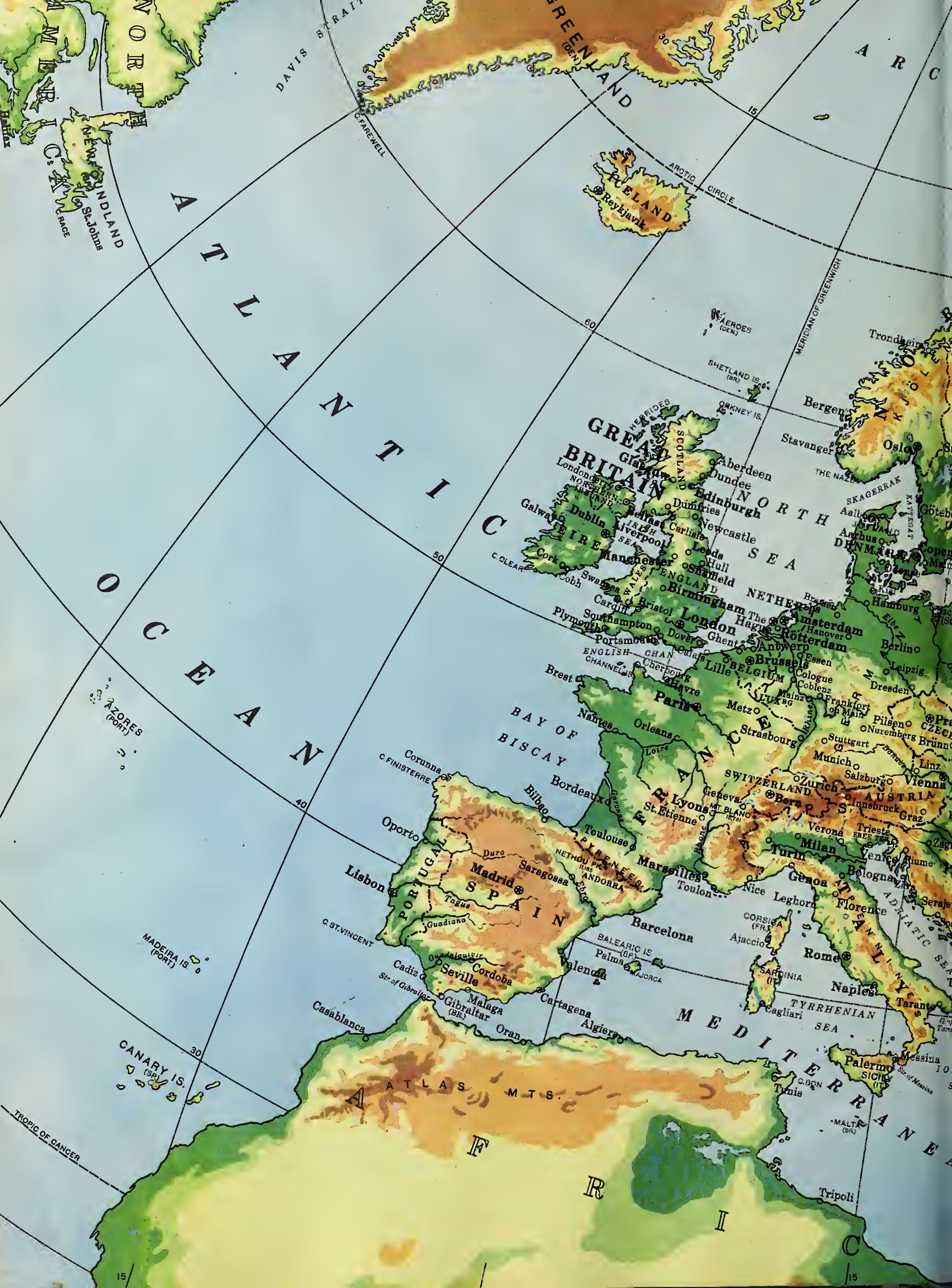


PLATE XII

SOUTH AMERICA

GLOBULAR VIEW

APPROX. SCALE 1:30,000,000


NORTH AMERICA
Halifax
NEWFOUNDLAND
C. RACE
St. Johns
DAVIS STRAIT
C. FAREWELL
GREENLAND (DEN.)
30
15
ARC
ARCTIC CIRCLE
ICELAND
Reykjavik
ATLANTIC OCEAN
FAEROES (DEN.)
MERIDIAN OF GREENWICH
60
SHETLAND IS. (BR.)
ORKNEY IS.
Trondheim
Bergen
Stavanger
Oslo
HEBRIDES
GREAT BRITAIN
SCOTLAND
Glasgow
Aberdeen
Dundee
Edinburgh
Londonderry
NORTHERN IRELAND
Belfast
Dumfries
Newcastle
Carlisle
NORTH SEA
THE NAZE
SKAGERRAK
KATTEGAT
Aalborg
Aarhus
DENMARK
Göteborg
Galway
EIRE
Dublin
IRISH SEA
Liverpool
Manchester
Leeds
Hull
Sheffield
Cork
Cobh
C. CLEAR
50
WALES
ENGLAND
Swansea
Cardiff
Bristol
Birmingham
NETHERLANDS
Bremen
Kiel
Hamburg
Amsterdam
The Hague
Rotterdam
Hanover
Berlin
Elbe R.
Plymouth
Southampton
London
Dover
Portsmouth
Calais
Ghent
Antwerp
Brussels
BELGIUM
Essen
Cologne
Coblenz
Leipzig
Dresden
ENGLISH CHAN.
CHANNEL IS.
Cherbourg
Lille
LUX.
Mainz
Frankfort on Main
Rhine R.
Havre
Brest
Paris
Metz
Pilsen
Nuremberg
CZECH
Brünn
Nantes
Orleans
Loire
Strasbourg
Stuttgart
Danube
Munich
Salzburg
Linz
Vienna
BAY OF BISCAY
FRANCE
SWITZERLAND
Zurich
Bern
AUSTRIA
Innsbruck
Graz
AZORES (PORT.)
Corunna
C. FINISTERRE
Bordeaux
Bilbao
Geneva
Lyons
St. Etienne
MT. BLANC
Verona
Trieste
FREE TER.
Zagreb
Garonne
Rhone
Milan
Venice
Fiume
40
Oporto
Toulouse
NETHOU PK.
PYRENEES
ANDORRA
Marseilles
Toulon
Nice
Turin
Genoa
Bologna
Duero
Lisbon
PORTUGAL
Madrid
Saragossa
SPAIN
Ebro
Tagus
Guadiana
Leghorn
Florence
ITALY
ADRIATIC SEA
Serajevo
C. ST. VINCENT
Barcelona
CORSICA (FR.)
Ajaccio
Rome
Guadalquivir
Cordoba
Seville
Cadiz
Str. of Gibraltar
Malaga
Gibraltar (BR.)
Cartagena
Valencia
BALEARIC IS. (SP.)
Palma
MAJORCA
SARDINIA (IT.)
Cagliari
Naples
Taranto
MADEIRA IS. (PORT.)
Casablanca
Oran
Algiers
MEDITERRANEAN
TYRRHENIAN SEA
Palermo
SICILY (IT.)
Str. of Messina
Messina
ION
CANARY IS. (SP.)
30
ATLAS MTS.
C. BON
Tunis
MALTA (BR.)
TROPIC OF CANCER
AFRICA
Tripoli
15
15

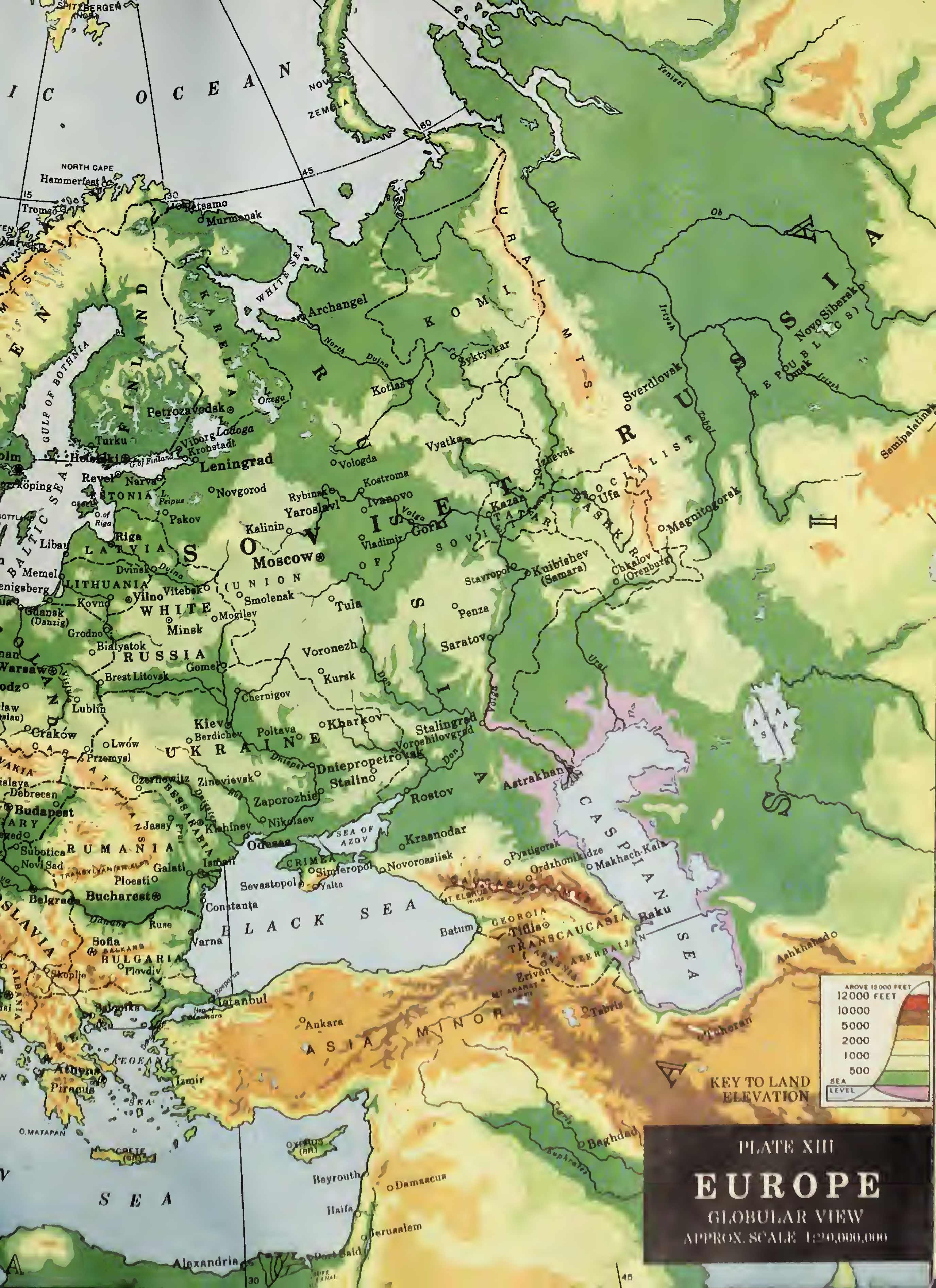
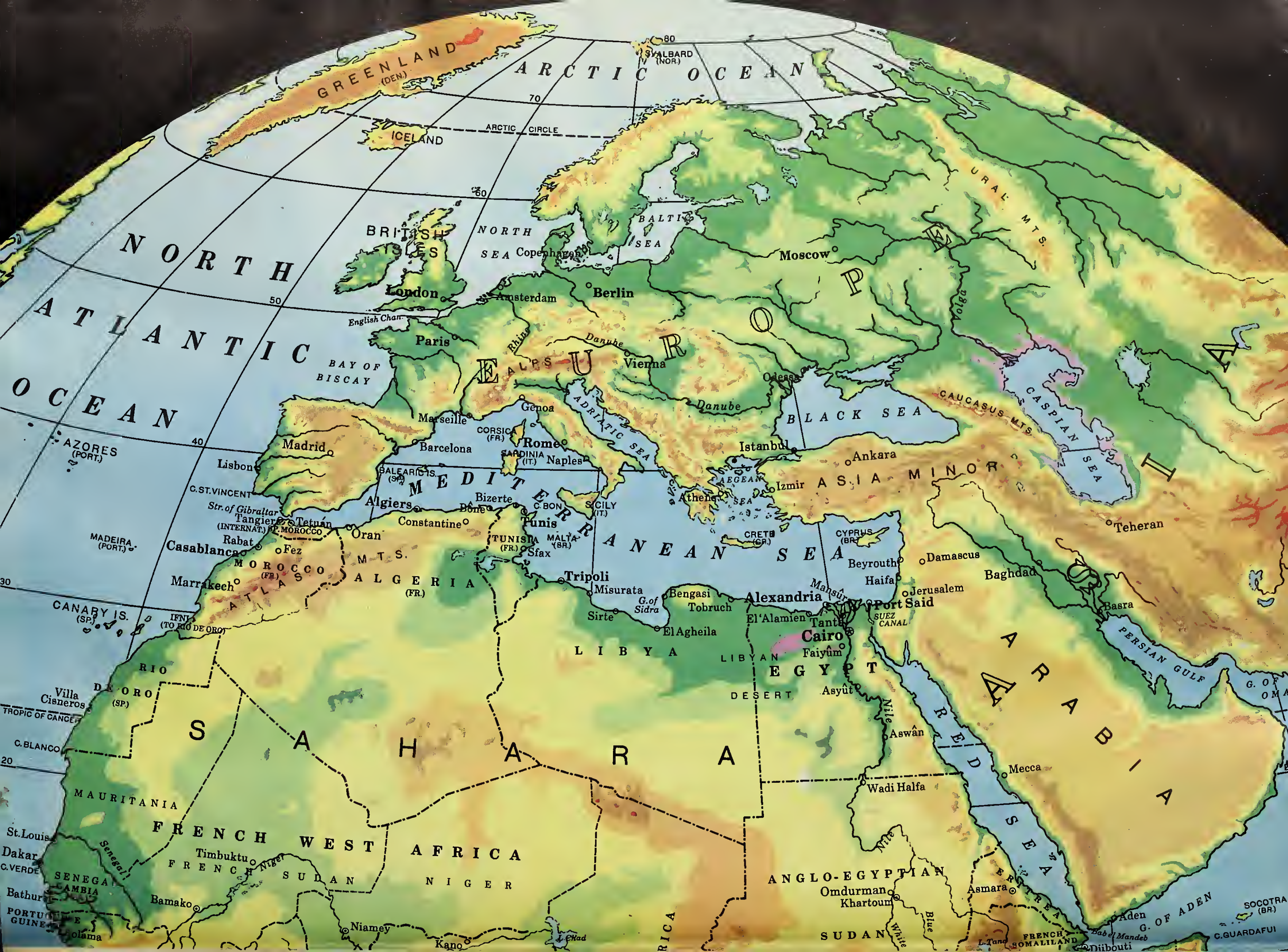


PLATE XIII

EUROPE

GLOBULAR VIEW

APPROX. SCALE 1:20,000,000


GREENLAND (DEN.)
ARCTIC OCEAN
SVALBARD (NOR.)
80
70
60
50
40
30
20
ARCTIC CIRCLE
ICELAND
NORTH ATLANTIC OCEAN
BRITISH ISLES
NORTH SEA
BALTIC SEA
Copenhagen
Moscow
URAL MTS.
London
Amsterdam
Berlin
English Chan.
Paris
BAY OF BISCAY
EUROPE
Rhine
ALPS
Danube
Vienna
Volga
ASIA
Odessa
Danube
BLACK SEA
CAUCASUS MTS.
CASPIAN SEA
Marseille
Genoa
CORSICA (FR.)
ADRIATIC SEA
Madrid
Barcelona
Rome
SARDINIA (IT.)
Naples
Istanbul
Ankara
AZORES (PORT.)
Lisbon
BALEARIC IS. (SP.)
MEDITERRANEAN SEA
AEGEAN SEA
Izmir
ASIA MINOR
C.ST.VINCENT
Str. of Gibraltar
Tangier
(INTERNAT.)
Tetuán
SP. MOROCCO
Algiers
Bizerte
Bône
C.BON
SICILY (IT.)
Athens
Teheran
Oran
Constantine
Tunis
TUNISIA (FR.)
MALTA (BR.)
Sfax
CRETE (GR.)
CYPRUS (BR.)
MADEIRA (PORT.)
Casablanca
Rabat
Fez
MOROCCO (FR.)
ATLAS MTS.
ALGERIA (FR.)
Tripoli
Beyrouth
Damascus
Baghdad
Marrakech
Misurata
G. of Sidra
Bengasi
Tobruch
Alexandria
Mansûra
Haifa
Jerusalem
Port Said
SUEZ CANAL
Basra
CANARY IS. (SP.)
IFNI (TO RIO DE ORO)
Sirte
El Agheila
El 'Alamein
Tanta
Cairo
Faiyûm
LIBYA
LIBYAN DESERT
EGYPT
Asyût
PERSIAN GULF
G. OF OMAN
RIO DE ORO (SP.)
Villa Cisneros
TROPIC OF CANCER
C.BLANCO
SAHARA
Nile
Aswân
RED SEA
ARABIA
Mecca
Wadi Halfa
MAURITANIA
FRENCH WEST AFRICA
St.Louis
Senegal
Dakar
C.VERDE
SENEGAL
GAMBIA
Bathurst
PORTUGUESE GUINEA
Bolama
Timbuktu
FRENCH SUDAN
Niger
NIGER
Bamako
Niamey
Kano
L. Chad
AFRICA
Nile
ANGLO-EGYPTIAN SUDAN
Omdurman
Khartoum
Blue
White
Asmara
ERITREA
L. Tana
FRENCH SOMALILAND
Djibouti
Bab el Mandeb
Aden
G. OF ADEN
SOCOTRA (BR.)
C.GUARDAFUI

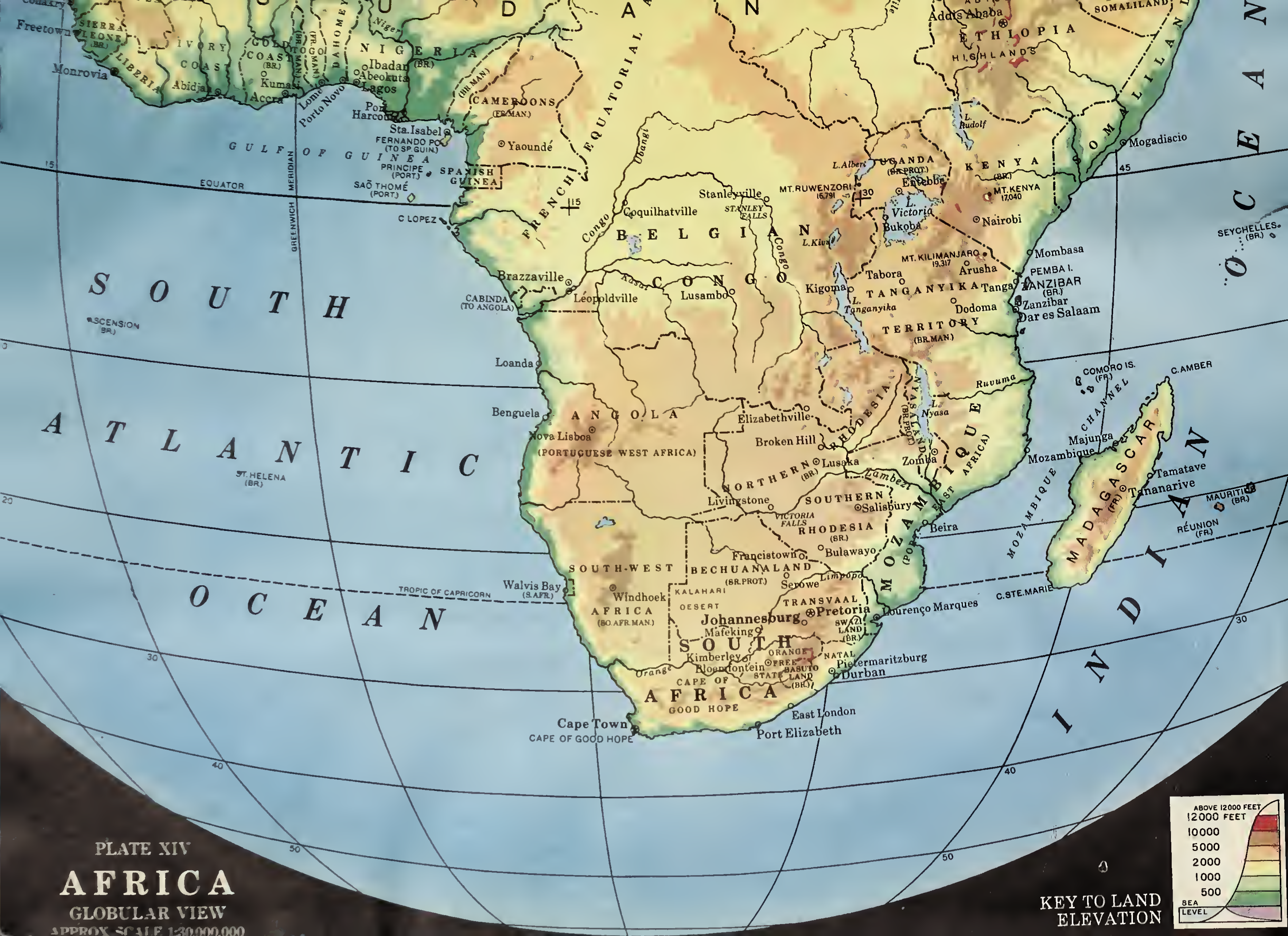


PLATE XIV

AFRICA

GLOBULAR VIEW

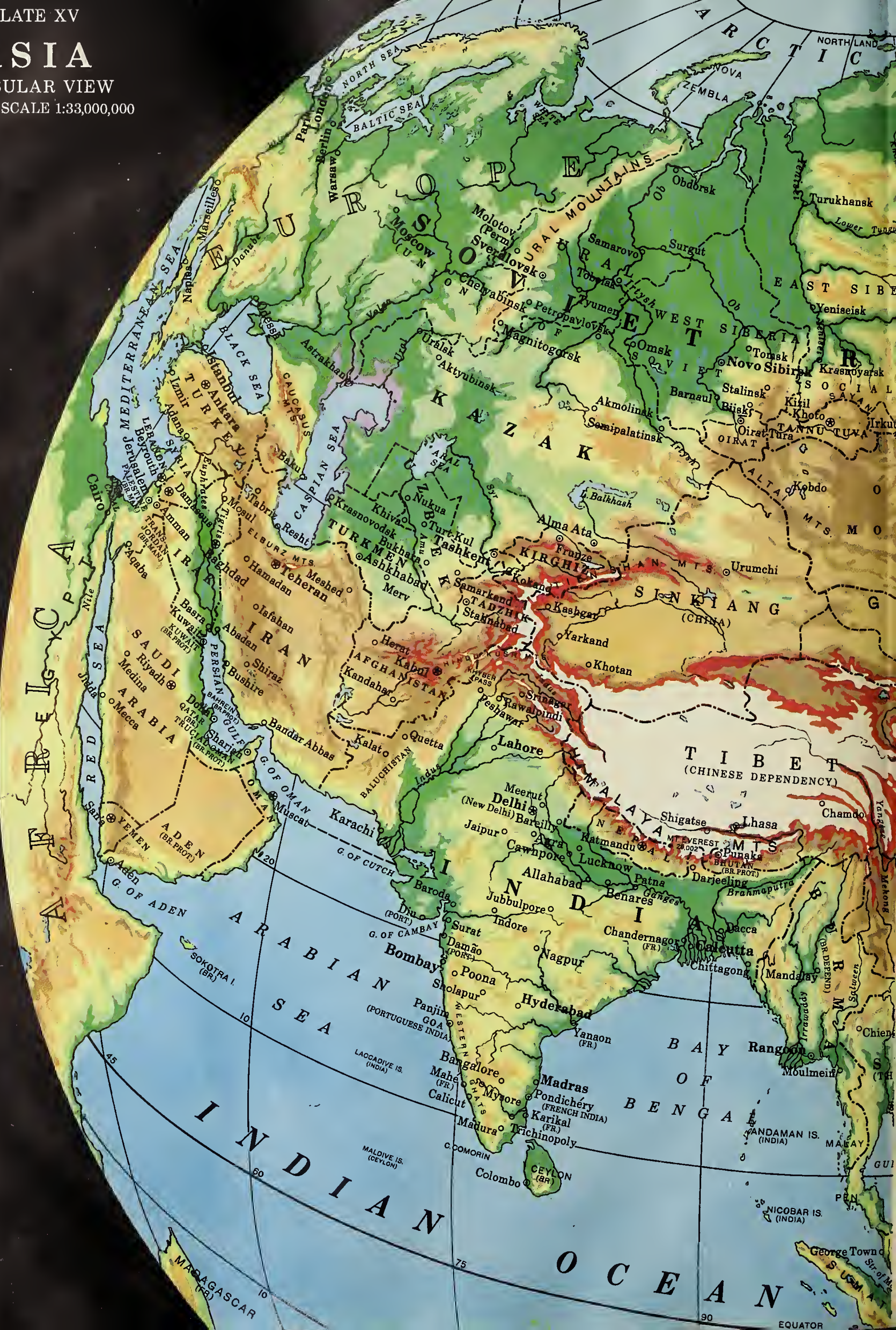
APPROX. SCALE 1:30,000,000

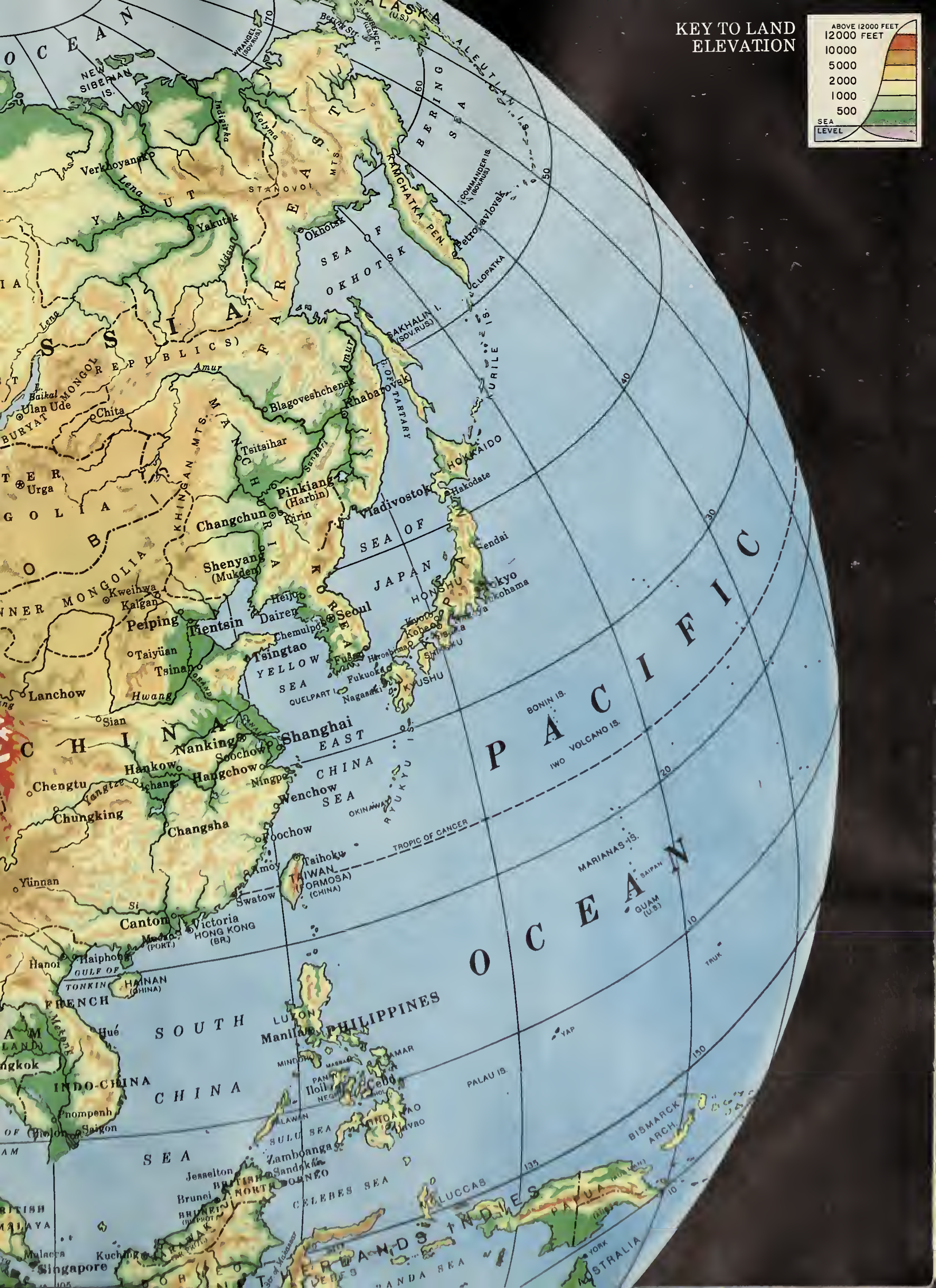
PLATE XV

ASIA

GLOBULAR VIEW

APPROX. SCALE 1:33,000,000




KEY TO LAND ELEVATION
ABOVE 12000 FEET
12000 FEET
10000
5000
2000
1000
500
SEA LEVEL
ALASKA (U.S.)
ALEUTIAN IS.
Bering Str.
ST. LAWRENCE I. (U.S.)
WRANGEL I. (SOV. RUS.)
NEW SIBERIAN IS.
OCEAN
BERING SEA
COMMANDER IS. (SOV. RUS.)
Petropavlovsk
KAMCHATKA PEN.
C. LOPATKA
Indigirka
Kolyma
Verkhoyansk
Lena
YAKUT
Yakutsk
Aldan
STANOVOI MTS.
FAR EAST
Okhotsk
SEA OF OKHOTSK
SAKHALIN I. (SOV. RUS.)
KURILE IS.
ASIA
RUSSIA
SOVIET
REPUBLICS)
BURYAT MONGOL
L. Baikal
Ulan Ude
Chita
Amur
Blagoveshchensk
Khabarovsk
G. OF TARTARY
Tsitsihar
Sungari
MANCHURIA
KHINGAN MTS.
Urga
OUTER MONGOLIA
GOBI
INNER MONGOLIA
Kweihwa
Kalgan
Pinkiang (Harbin)
Kirin
Changchun
Shenyang (Mukden)
Vladivostok
HOKKAIDO
Hakodate
SEA OF JAPAN
Sendai
HONSHU
JAPAN
Tokyo
Yokohama
Kyoto
Kobe
Osaka
Nagoya
SHIKOKU
KYUSHU
Hiroshima
Fukuoka
Nagasaki
KOREA
Heijo
Seoul
Chemulpo
Fusan
Dairen
Peiping
Tientsin
Tsingtao
Taiyüan
Tsinan
GRAND CANAL
Hwang
YELLOW SEA
QUELPART I.
Lanchow
Sian
CHINA
Nanking
Soochow
Shanghai
Hankow
Hangchow
Ichang
Ningpo
Chengtu
Yangtze
Chungking
Changsha
Wenchow
EAST CHINA SEA
RYUKYU IS.
OKINAWA
Foochow
Amoy
Taihoku
TAIWAN (FORMOSA) (CHINA)
Swatow
TROPIC OF CANCER
Yünnan
Si
Canton
Macao (PORT.)
Victoria
HONG KONG (BR.)
Hanoi
Haiphong
GULF OF TONKIN
HAINAN (CHINA)
FRENCH
SIAM (THAILAND)
Mekong
Hué
Bangkok
INDO-CHINA
Pnompenh
Saigon
Cholon
SOUTH CHINA SEA
LUZON
Manila
PHILIPPINES
MINDORO
MASBATE
SAMAR
PANAY
Iloilo
Cebu
NEGROS
BOHOL
LEYTE
PALAWAN
MINDANAO
Davao
SULU SEA
Zamboanga
Sandakan
Jesselton
BRITISH NORTH BORNEO
Brunei
BRUNEI (BR. PROT.)
SARAWAK
BRITISH MALAYA
Malacca
Singapore
Kuching
CELEBES SEA
MOLUCCAS
NETHERLANDS INDIES
BANDA SEA
Str. of Macassar
PAPUA
C. YORK
AUSTRALIA
BISMARCK ARCH.
BONIN IS.
VOLCANO IS.
IWO
PACIFIC OCEAN
MARIANAS IS.
SAIPAN
GUAM (U.S.)
TRUK
YAP
PALAU IS.
70
60
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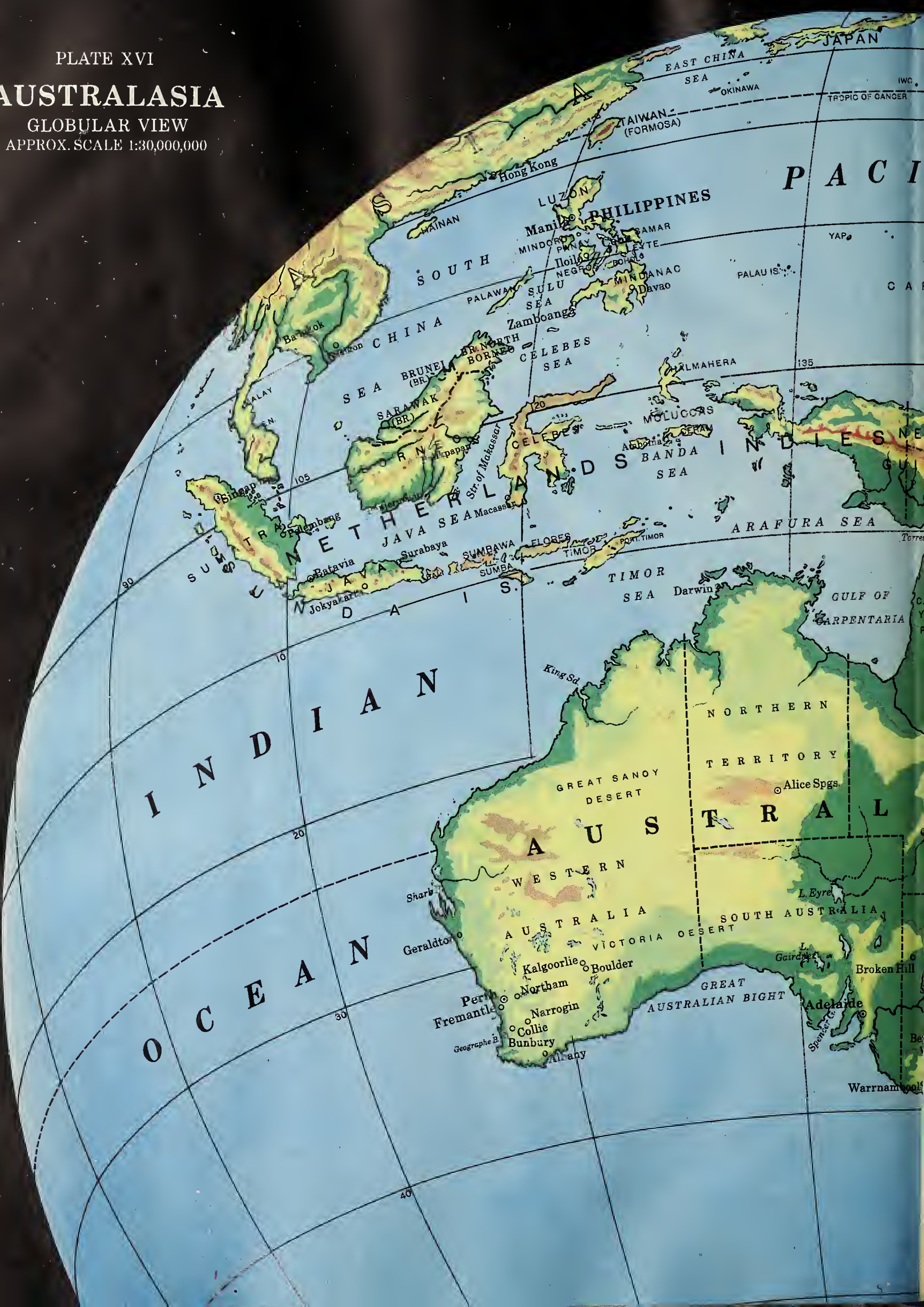
150
135
105
10

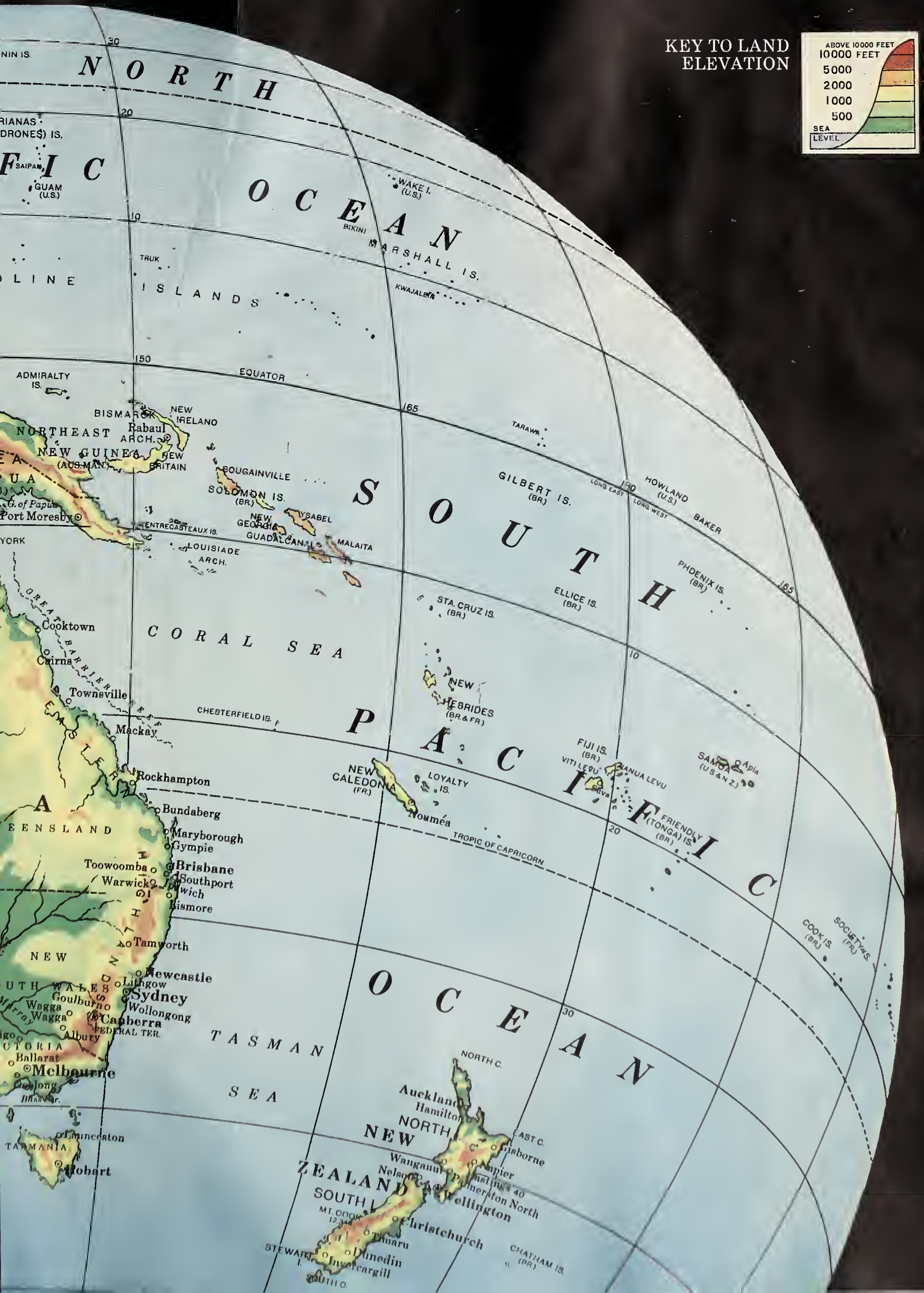
PLATE XVI

AUSTRALASIA

GLOBULAR VIEW

APPROX. SCALE 1:30,000,000




KEY TO LAND ELEVATION
ABOVE 10000 FEET
10000 FEET
5000
2000
1000
500
SEA LEVEL
NORTH
PACIFIC
OCEAN
NIN IS.
RIANAS
DRONES) IS.
SAIPAN
GUAM (U.S.)
WAKE I. (U.S.)
BIKINI
MARSHALL IS.
KWAJALEIN
TRUK
LINE
ISLANDS
EQUATOR
ADMIRALTY IS.
BISMARCK ARCH.
NEW IRELAND
Rabaul
NEW BRITAIN
NORTHEAST NEW GUINEA (AUS.MAN.)
PAPUA
G. of Papua
Port Moresby
YORK
BOUGAINVILLE
SOLOMON IS. (BR.)
NEW GEORGIA
YSABEL
GUADALCANAL
MALAITA
ENTRECASTEAUX IS.
LOUISIADE ARCH.
TARAWA
GILBERT IS. (BR.)
HOWLAND (U.S.)
BAKER
LONG EAST
LONG WEST
PHOENIX IS. (BR.)
ELLICE IS. (BR.)
SOUTH
STA. CRUZ IS. (BR.)
GREAT BARRIER REEF
Cooktown
Cairns
CORAL SEA
Townsville
Mackay
CHESTERFIELD IS.
NEW HEBRIDES (BR.& FR.)
FIJI IS. (BR.)
VITI LEVU
VANUA LEVU
Suva
SAMOA (U.S.& N.Z.)
Apia
NEW CALEDONIA (FR.)
LOYALTY IS.
Nouméa
FRIENDLY (TONGA) IS. (BR.)
TROPIC OF CAPRICORN
Rockhampton
Bundaberg
QUEENSLAND
Maryborough
Gympie
Toowoomba
Brisbane
Southport
Warwick
Ipswich
Lismore
EASTERN HIGHLANDS
Tamworth
NEW SOUTH WALES
Newcastle
Lithgow
Sydney
Goulburn
Wollongong
Wagga Wagga
Murray
Canberra
FEDERAL TER.
Albury
VICTORIA
Ballarat
Melbourne
Geelong
COOK IS. (BR.)
SOCIETY IS. (FR.)
OCEAN
TASMAN SEA
NORTH C.
Auckland
Hamilton
NORTH I.
NEW ZEALAND
EAST C.
Gisborne
Wanganui
Napier
Nelson
Hastings
Palmerston North
Wellington
SOUTH I.
MT. COOK 12349
Christchurch
Timaru
Dunedin
Invercargill
STEWART I.
SOUTH C.
CHATHAM IS. (BR.)
Launceston
TASMANIA
Hobart
30
20
10
150
165
180
165
10
20
30
40

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